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## ORIGINAL COMMUNICATIONS.

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### TUMORS OF THE LARYNX—THEIR SURGICAL CONSIDERATION.\*

BY JOHN F. ERDMANN, M. D., NEW YORK.

The former prevailing pessimism in the consideration of the treatment of cancer has been changed to one of optimism by early diagnoses of the cases, and by urging upon the patient prompt acceptance of surgical treatment.

We all of us know how difficult it is to tell a patient that he must lose, not only his voice, but practically his powers of speech, and how doubly difficult it is for that patient to accept anything in the surgical line which will, within half an hour of his taking the anesthetic, place him with the mutes. How many of us would submit to total operation after having observed a case of laryngectomy conversing with his paper and pencil? What more pitiful object than such a patient attempting phonation, and succeeding only by a peculiar sibilant, glosso-pharyngeal explosive whisper, hard to understand except by prolonged and close attention, both to sound and lip movements, aided and abetted by the listener knowing the greater portion of the time what he, the patient, should say next? I fear it is this aspect that frequently causes not only the patient to refuse operation early, but prevents the physician urging the necessity of such mutilation.

The operation of intra-laryngeal removal belongs distinctly to the field of the laryngologist, and will not be considered further than to state that my impression is that the laryngologist of to-day is not over-sanguine of his results in malignancies, and is practicing this type of removal rarely. The other types of operation are specifically

\*Read before the meeting of the Laryngological Section of the New York Academy of Medicine, November 23, 1910.

in the major surgical field, and are thyrotomy, partial or hemilaryngectomy, and laryngectomy or complete removal of the larynx.

Thyrotomy: Under this head we have multiple papillomata and such malignancies as do not involve the structures of one side too far back, i. e., toward the median line, and those that do not invade the cartilages nor perichondrium. The advantages to the patient of this operation are so obvious that they need not be entered into.

Hemi-laryngectomy or partial laryngectomy: Under this head we have those growths that do not encroach upon the median line, either behind or forward, nor cross this line, and those excluded from thyrotomy in which the tumor invades the cartilage or involves the perichondrium. The advantages of this operation are obviously those accruing from the fact that the patient inspires through his nose and mouth, thereby protecting his bronchi and air-cells from such inflammatory invasions as are occasionally observed where the air is taken in through a tracheal tube.

That this operation is accompanied by some danger of stenosis I cannot but believe, as one patient on whom I did a left hemilaryngectomy died very suddenly under circumstances which might be construed as asphyxia, although the symptoms would also point to a fairly rapid apoplexy.

Laryngectomy or complete removal: This operation includes all malignant growths excluded from thyrotomy and those involving parts of both sides, or those extensive invasions of the larynx without extrinsic muscle involvement.

Inoperables: Those patients in whom the involvement is extensive, extrinsic muscles invaded, and secondary metastases evident. In this class one can but give relief from asphyxia by means of tracheotomy, or starvation ligation following Dawbarn's idea, but ligating, as Brewer did in one case (*Annals of Surgery*, Vol. 50, p. 821) both superior thyroids and the inferior on one side only, in which there was marked relief for a short time.

Glück, 1881 (see Brewer, *Annals of Surgery*, Vol. 50), advocated the low placing of the severed trachea, and made distinct advances in the technic of laryngectomy, which robbed this operation of much of its danger.

The immediate complications of these operations have been inspiration pneumonia, septic infection by reason of the filthy condition of some of these ulcerating and discharging areas, and hemorrhage. Thus far I have had no deaths due to either primary inspiration pneumonia or sepsis, but have had one from secondary hemorrhage on the fifth day, followed by an inspiration pneumonia.

The remote complications are: (a) Secondary extension on the same side or to the opposite side in thyrotomies; (b) to the opposite side in cases of hemi-laryngectomy; (c) secondary metastases in other situations in all types of operative cases, and (d) stenosis of the pharyngo-esophageal orifice, either by secondary malignancy or by means of non-malignant cicatrices. This latter occurred in one case of mine, in whom a gastrostomy was necessary within a year almost to the day. I have recently seen such a case presented by Dr. Taylor, in which he did a plastic on the esophagus, feeding the patient by a tube through the esophagus a short distance above the tracheal opening. Should this cicatricial condition arise, if we are satisfied of the non-malignancy, we can then do the operation of Taylor. Should we feel that the stenosis is a malignant one, gastrostomy is indicated, as was done in my case.

Direct post-operative subsequent treatment: No patient should receive any of these operations without having constant nursing. My only immediate death was due to the fact that the patient was a ward case. When on the fifth or six post-operative day his turn came for attention, it was observed that his neck and head were in a pool of blood and that he had inspired quantities of blood, resulting subsequently in an inspiration pneumonia and death. When the patient is returned to bed, the head should be depressed by elevating the foot of the bed, so that the tendency will be for discharge from the wound to gravitate away from the tracheal opening. Sufficient morphia to allay the mental as well as the physical shock should be administered.

Nourishment should be given by the rectum for several days. Careful and constant attention should be given by the nurse to the discharges from the mouth and trachea; also constant care to the tube to prevent obstruction. These cases occur so infrequently in our hospitals that few nurses even know the appearance, to say nothing of the mechanism, of a tracheal tube.

The patient should assume the semi-sitting posture as soon as the secretions have ceased, usually at the end of twenty-four to seventy-two hours.

Subsequent treatment—remote: This consists in considering the patient's comfort, and is one of tube consideration. Very often the tube becomes a source of irritation, and specially devised tubes become essential. This is due to the change in the axis of the tracheal entrance, and to the orifice of the trachea being on a level with the skin. I have found that the patient himself can give better instructions to the instrument-maker than the surgeon can.

The careful observation of his ability to swallow, if a complete laryngectomy has been done, is a rule. Should he complain of pain or difficulty in swallowing, a careful introduction of an esophageal bougie will aid us in two distinct ways, first as to whether his stenosis is at the site of this operation, and secondly whether any other obstructions exist as a result of metastases in the length of the esophagus. The result found, in event anything beyond dilatation is necessary, will indicate which operation, Taylor's plastic esophageal or a gastrostomy, is to be done.

Secondary operation upon the larynx or trachea after a thyrotomy or hemi-laryngectomy may be required. This presents no serious difficulty, but a laryngectomy after a thyrotomy, especially if a high tracheotomy has been done, may be accompanied by the greatest difficulty in preventing blood inspiration, etc., (see history of Mr. F.).

Speech: What can we offer these people in the way of post-operative speech? Thyrotomy should be followed by most excellent voice, and hemi-laryngectomy by a voice that will almost equal that of thyrotomy, while complete laryngectomy produces a voice that is expulsively explosive and whispering, or sibilant in character, with only a fair possibility of being understood. Finally, the use of some of the artificial voice-boxes, necessitating the wearing of a mechanism that is hard to conceal, may be advocated.

Operations: I can only repeat with slight additions what I stated in my paper on "Tumors of the Larynx, etc." (*American Journal of Surgery*, December, 1906). I have not found it necessary to place my patients in the Rose or Trendelenburg positions, as all work preliminary to the bisection of the trachea can be done without blood and mucus entering the trachea, except in those cases demanding previous tracheotomy. In the operations recorded here, every patient was kept flat on the back, with only a small sand pillow under the neck to give more room for exposure of the trachea, etc. A median incision is made from near the epi-sternal notch, in laryngectomy, to the hyoid bone, and extended outward to each side in the hyoid region when more room is required for the exposure. The soft parts down to the lower rings of the trachea are retracted laterally, the isthmus of the thyroid is bisected between two ligatures, and the musculature of the thyroid and cricoid cartilages is removed from the sides with blunt dissectors and scissors. Then the cleavage between the esophagus and the posterior tracheal wall is carefully entered, making a clean separation at the site of the second and third rings. When this has been accomplish-



ed, either two hooks or sutures are placed in or around the second or third ring, the trachea bisected at the first and second, or the second and third rings, and the lower portion drawn down and forward, while an assistant checks whatever oozing is present by placing gauze in the tracheal gap. The lower end is then sutured or anchored in the lower angle of the wound, and anesthesia is continued through this portion, either through a rubber tube or with a tracheotomy tube. The trachea, previous to the use of the tube, is to be swabbed with a solution of cocaine, five to ten per cent, with about one-third of adrenalin added.

The next step is one that can be done very deliberately, as all danger of inspiration of blood should now be over. The cricoid cartilage, and the first ring of the trachea if it is to be removed, are seized either with forceps or the index-finger introduced as a tractor. These structures are then pulled upward, and a close cleavage dissection is made between the pharyngeal and the posterior laryngeal walls. Should the laryngo-pharyngeal structures be invaded by the disease, they must be sacrificed. Excision is then done, either sub-epiglottic or entire; any tears or intentional gaps in the pharynx are to be sutured; the musculature is brought together; and finally the skin, with a small rubber tissue or a gauze drain, is sutured down to and behind the temporary tracheal implantation. This implantation is made permanent by suturing to the skin. In suturing the trachea to the skin, care must be taken not to suture too high, as this will induce tugging on the sutures and prevent complete lung expansion, thereby causing an immediate operative dyspnea.

In hemi-laryngectomy and thyrotomies, a preliminary tracheotomy gives one a great sense of comfort, and allows of careful and deliberate removal of all diseased areas. The trachea wound is packed above and to the sides of the tube with gauze, to prevent inspiration of blood.

After exposure of the larynx, in doing these two operations, the thyroid cartilage is split in the median line with a knife, or in calcareous conditions it may be necessary to use a fine septum saw. The separate halves are then inspected. Should a removal of the cartilage and soft parts (partial or hemi-laryngectomy) be decided upon, the musculature, etc., is removed, excision is begun and concluded from below upwards, as in laryngectomy. The soft tissues are then sutured in the median line. In case thyrotomy only is necessary, the soft parts invaded are removed down to the cartilage, oozing being checked either by gauze, by gauze and adrena-

lin or by the actual cautery. The thyroid halves are then sutured together by taking in the soft parts in immediate contact, then a second row of sutures is inserted, and finally the skin is united. The tracheotomy tube is left in for twenty-four hours to several days, depending upon the amount of hemorrhagic oozing and discharge.

#### COMMENTS ON PREVIOUSLY REPORTED CASES.

*Case 1.* Male, 35 years of age, reported in the above-quoted paper, who had an esophageal stenosis with subsequent gastrostomy, died about two years after the operation of laryngectomy. This man's means of communication was both by a fairly understandable pharyngo-glosso-labial whisper, and by paper and pencil.

*Case 2.* Male, 32 years old. Laryngectomy December 30, 1905. He had a hemorrhage January 4, 1906, with death in a few days from pneumonia, following blood aspiration, etc., on January 4.

*Case 4.* Thyrotomy for epithelioma November 9, 1904. Last seen by me October, 1910, in excellent condition. Dr. Coakley reports the field clear of any suspicious tissue.

*Case 5.* Thyrotomy November, 1903, and October, 1904. The last report, September, 1910, was one of no recurrence, voice still a whisper.

Two recent cases, one a hemi-laryngectomy, the other a laryngectomy secondary to thyrotomy, are herewith reported:

G. P., male, 61 years old, referred by Dr. Coakley March, 1909, gave the following history: There was some difficulty of speech for several months. The voice had become very husky in a period of three months' time. There was no loss in weight, no dysphagia, no dyspnea, and only a slight expectoration of mucus. He had been a free liver, indulging in a large number of cigarettes daily. The examination of the neck showed no evidence of secondary invasion of the glands. The larynx was broadened and hardened more than usual.

Unfortunately I am not in possession of Dr. Coakley's records as to involvement seen by the laryngoscope, but the pathologist's report to Dr. Coakley is as follows: "Specimen from the right vocal cord shows an infiltration of sub-epithelial tissues, with a mass of large irregular cells having irregular large vesical nuclei of the squamous type, typically a squamous cell carcinoma."

The operation was done on March 24, 1909. A median incision for hemi-laryngectomy was made. On exposing the thyroid isthmus it was found to be an inch and a half wide. It was doubly clamped and tied with suture ligature. The right half was skeletonized, and a low tracheotomy done, with anesthesia continued through a

trachea tube. Sawing of the thyroid cartilage in the median line showed a small growth invading the inferior vocal cords, at the point of attachment of the cricoid, and the sinus above. The cricoid was then split with scissors and the thyroid cartilage of the right side removed, with the mucus membrane, well to the left of the median line. Plastic work was done on the remainder of the mucus membrane, so that over two-thirds of the raw surface was recovered. There was very little oozing, bleeding or irritation. Immediately after the operation the patient was placed on the injured side instead of in the dependent position. His post-operative condition was one of marked easy convalescence, and he was discharged from our service in three weeks. Owing to very profound discharge of mucus, it was deemed inadvisable to remove his tube until the fifth day. He was able to take nourishment by the mouth on the second day. The patient died a year and a half later from secondary invasion.

A. C. F., male, aged 42, was referred to me by Dr. Coakley, November 9, 1909. He was an engraver, and constantly inhaled the fumes of acids used in his profession. He had been a heavy smoker. No specific history. Gave a history of gall-bladder trouble about two years ago, at which time he lost forty pounds. Now weighed 180 pounds. Complained of hoarseness covering a period of eight months.

The inspection of his larynx, as near as I can recall from Dr. Coakley's report, showed involvement of both sets of vocal cords in the anterior half. He was referred to Dr. Coakley by Dr. Demorest of Passaic, about three or four weeks before I saw him. Dr. Coakley desired very much to have a laryngectomy done, but this was refused on the part of the patient and of the family consultant, so a thyrotomy was done, with curettage of both halves. A tracheotomy, high placed, involving the second ring, was done previous to the bilateral thyrotomy. Twenty-one days after the thyrotomy it was found that a small bit of tissue, granulomatous in appearance, was protruding from the tracheal opening. This was examined, and found to be of the same nature, carcinomatous, as the original specimen. It might be stated here that at the time of the thyrotomy the cartilages were found to be involved. The patient being notified of the rapid recurrence then accepted a complete laryngectomy.

On examination by me November 9, 1909, the trachea wound presented a mass of granulomatous tissue, rather soft in character, which had been pronounced malignant by microscopic examination,

two days before. On November 13 the patient submitted himself to a complete laryngectomy. The difficulties attending this operation can only be appreciated by realizing the dangers which confront one in ordinary tracheotomy from inspiration of blood. Then the removal of the recently formed adhesions, the extensive invasion of granulomatous tissue, and the liberation of the trachea all necessitated about forty-five minutes work before we could drop the trachea tube three rings, which was necessary for the work. As soon as the trachea was liberated from the adhesions and recent exudate sufficiently to lower the trachea tube, skeletonizing of the cricoid and thyroid was done, but also with great difficulty, owing to the previous operation.

This operation took an hour and a half to an hour and three-quarters, where ordinarily a laryngectomy can be done in forty-five minutes. The reaction of the patient was excellent. He left the hospital in nine or ten days, with no complications except great difficulty in fitting himself with a tube. This was finally accomplished to his satisfaction. A marked improvement took place in the man for four months, when secondary deposits manifested themselves. Death followed in seven or eight months after the operation.

Prognosis:—In regard to the operative outcome, the prognosis is particularly good at the present time. Prognosis as to recurrence or rapidity of extension has largely to do with the age of the patient. Malignancies of the larynx in the young, as well as malignancies in the young in other fields, are more prone to rapid extension than in the aged, so that early diagnosis with early removal is absolutely essential to a good prognosis.

60 West Fifty-second Street.

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**Catching Cold Phobia.** W. BRADY, *Med. Rec.*, Sept. 10, 1910.

Relying upon present knowledge, Brady affirms that cold, dampness, draughts, wet feet, exposure, etc., play a negligible part in respiratory disease. Our avoidance of them is purely instinctive, due to the bodily discomfort they create. Draughts, in fact, are necessary for thorough ventilation. The true predisposing factors of various respiratory diseases are dietetic abuses, unhygienic clothing, overheated apartments and defective ventilation. Ed.

## ANALGESIA OF THE LARYNX BY ALCOHOL INJECTION OF THE INTERNAL BRANCH OF THE SUPERIOR LARYNGEAL NERVE.

BY ALFRED LEWY, M. D., CHICAGO.

A practical method for the relief of the atrocious pains in some cases of tuberculosis of the larynx has long been desired; yet alcohol injection of the sensory nerve does not seem to have attracted the attention in this country that I believe it deserves. In fact, as far as I can learn, its application has not been reported here.

In October, 1908, while acting as assistant in the clinic of Dr. Sturman of Berlin, and not knowing at that time of its prior application by Dr. Rudolf Hoffman (*Muench. Med. Wchnschr.*, No. 14, 1908), I suggested a trial of this procedure, which was later successfully performed. The patient was, I believe, subsequently shown by Dr. Sturman before the Berliner Laryngologischer Gesellschaft, February 19, 1909. I now desire to report two additional cases:

R. P., aged 35, patient of Dr. Maximilian Meinhardt and Dr. Theodore Sachs: Diagnosis—tuberculosis of the lungs and of the spine of several years' standing; infiltration of left arytenoid region, aryepiglottic fold and left half of epiglottis, at the inner lower surface of which was a group of tubercles of which the visible area was about one-fourth inch in diameter. The potassium iodide therapeutic test was without result. Since about seven months, patient has had pain in the left side of the throat which he has borne with fortitude until about a week ago, when it became very severe. December 2, at the request of Dr. Meinhardt, I injected into the internal branch of the left superior laryngeal nerve, 12 minims of 1 per cent cocain in 75 per cent alcohol. After the usual pain due to the injection ceased, the patient was free from pain and has so remained until to-day (December 27), when he reported for another examination. Cough no better.

C. A., aged 45, excessive user of alcoholic liquor and tobacco for many years: Diagnosis—advanced tuberculosis of lungs; infiltration of epiglottis, aryepiglottic folds, ventricular bands and particularly of the interarytenoid and arytenoid region. No ulceration visible. Pain in the middle of the throat, radiating toward left

ear. The pain, together with the mechanical obstruction offered by the swollen posterior wall of the larynx almost prevented swallowing. Could take only a small sip of milk at a time; no solids; "nearly strangled trying to take a swallow of milk punch last Sunday." December 16, I injected 25 minims 75 per cent alcohol (without cocain), into the internal branch of the left superior laryngeal nerve. As soon as the usual pain due to the injection had subsided, patient drank balance of the alcohol to which I had added three parts of water (equal to about 1 ounce of 20 per cent alcohol), and said it was the first comfortable swallow he had had in two weeks. December 19, he reports no return of pain; sensation of lump in throat remains; cough much less and sleep consequently better. He feels the touch of the probe on the left side of the larynx, but less acutely than on the right.

The injection is made directly through the skin of the neck. The technic is comparatively simple. I will omit discussion of the anatomy. From  $\frac{1}{2}$  to 2 cc. of 75 per cent alcohol (with or without 1 per cent cocain), warmed a little above body temperature, is injected at a sitting. The patient's head is inclined to the side opposite the one to be injected; the skin, previously shaved if necessary, is cleansed with alcohol; the operator's left hand grasps the larynx to steady it and hold it prominently under the skin of the side to be injected, in such a way that the thumb is on the uninjected side while the left index-finger seeks the comparatively tender point where the internal branch of the superior laryngeal nerve penetrates the thyro-hyoid membrane, a point about half-way between the upper border of the thyroid cartilage and the hyoid bone, and about a centimeter in front of (mesially from) the superior cornu of the thyroid cartilage. The index-finger is held firmly in place while the needle is inserted at the point marked by the center of the nail to a depth of 1 to  $1\frac{1}{2}$  cm. perpendicularly to the surface. If the nerve has been accurately located this insertion will cause a pain radiating characteristically toward the ear. However, the injection may be made in this locality drop by drop (after the pain caused by the insertion subsides) until the original pain ceases or until the full amount (2cc.) is used. The injection may be repeated next day if necessary. In my cases there was no loss of the cough reflex or aspiration of food, which could be taken with comfort following the injection. I have had no experience with the simultaneous injection of both sides, but as the operation does not seem to cause complete anesthesia, I believe this can be done if nec-

essary. An ordinary hypodermic syringe may be used, but a special obturator needle is perhaps preferable. No after-treatment is required. The puncture may be sealed with collodion if desired.

The entire subject of laryngeal anesthesia, its indications and benefits in tubercular conditions, with a complete bibliography, reports of five of his cases in which the above procedure was applied this year, and a description of his technic and that of Dr. Rudolf Hoffman, by Dr. O. Levinstein, of Berlin, appears in the *Arch. f. Laryngol.*, Bd. 23, Heft 2, 1910. Hoffman and Levinstein both use 85 per cent alcohol at 45° C., without cocaine.

Some failures will, of course, be encountered owing to the varying location of the branching of the nerve and to the pathologic alteration of anatomic relations. I believe the procedure is a great boon, and I should like to see it more generally applied in appropriate cases, and want to hear from other physicians of their experience with it. I have not as yet tried it in carcinoma or other affections associated with pain other than tuberculosis.

31 Washington Street.

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**Primary Streptococcus Diphtheria.** DAVID H. ORGEL, *Med. Record*, Aug. 13, 1910.

The author bases his conclusions on a series of 100 cases in private practice. About 80 per cent of these cases have been mild or moderately severe in type. In the other 20 per cent the disease was complicated with severe glandular enlargement, with suppuration and acute exudative nephritis. The diagnosis was made from the result of the microscopical examination of the cultures from the membrane. Local treatment seemed to be of most value. Anti-streptococcus and diphtheritic serum did not have much effect. Toilet of the mouth and throat acted beneficially—salt solution was used—spraying the throat with peroxide of hydrogen and applying an ice-bag to the neck were of value.

Complications of acute exudative nephritis occurs in all severe cases, and in some becomes chronic. Primary streptococcus diphtheria occurs oftener than we have been led to believe.

LEDERMAN.



## NON-SUPPURATIVE ETHMOIDITIS.\*

BY GEO. PAUL L. MARQUIS, M. D., CHICAGO.

In presenting this paper, it is not my purpose to take up a consideration or discussion of all the affections of the ethmoid, or even the one which is best known to rhinologists, namely suppurative ethmoiditis, but to confine myself to a form which has received comparatively little attention, and which to my mind is one of the most important. For by the recognition and correction of this form, we may in a great many instances prevent the suppurative form, and what is far more important, we may often relieve great suffering which has existed for some time and baffled the efforts of rhinologists who were looking for manifestations which may not appear till a later period, namely, polypi and purulent secretion.

What an important part the ethmoid plays in relation to the other sinuses can be seen at a glance when we consider that the frontal and maxillary practically drain through this bone, as the hiatus semilunaris and infundibulum are parts of it. This is readily explained if we consider the development of these sinuses. Killian, Zuckerkandl and others claim that the frontal sinus is developed from "the chief developmental groove of the ethmoid." This can happen by an ethmoid cell pushing its way between the lamellae of the frontal bone. Thus we may have the frontal sinus draining directly into the infundibulum or into another ethmoid cell, and an inflammation of this ethmoid with the attendant swelling of its membrane can easily occlude these openings and block off the drainage from this sinus, thus giving rise to the frequent condition of combined sinus affections.

The membranous lining of these sinuses is contiguous and identical with that of the respiratory portion of the nose, only it is much thinner—that of the ethmoid, according to Zuckerkandl, being thinner than that of the other sinuses. Even the membrane on the outer side of the middle turbinate is very thin, as can be noted in a normal case by touching it with a probe. The lining membrane of the sinuses is subject to the same inflammatory conditions as any other part of the nasal mucus membrane. These can

\*Read before the meeting of the Chicago Laryngological and Otological Society, November 22, 1910.

arise primarily, or as is more usually the case, by extension from the mucous membrane of the nose.

When the ethmoid membrane is involved we may find all the various changes from that of simple inflammation to the formation of polypi and bone necrosis. As polypi are the manifestations of chronic ethmoiditis it would be well to consider the various views held by different rhinologists as to their origin. Woakes claims that following some injury or inflammation or so-called catarrh small swellings develop on the medial surface of the ethmoid, which later coalesce, forming myxomatous bodies, at whose base periostitis develops, and finally bone necrosis.

Hajek divides the inflammatory changes in the membrane covering the ethmoid into three degrees: 1. A superficial inflammation of the membrane. 2. After it has involved the periosteum. 3. Extending even into the bony structure and manifesting itself by; (a) increase of the bony substance, or (b) resorption or degeneration of the same—the former condition being more common.

He claims the formation of polypi is simply a manifestation of the inflammation and not a result of the affection of the bone. Cordes agrees partly with Hajek, but says recurring polypi are due to an otitis or chronic periostitis with serious exudate, that when they arise from the membrane, a simple removal will cure, but when they recur it proves an involvement of the bone and necessitates its removal so far as the involvement extends.

Uffenorde draws the following conclusions as the result of his investigations: 1. The process is progressive and extends from the surface toward the bone. 2. It is not always possible to differentiate histologically between polypoid swelling and polyp-formation as both may involve the deeper structures. Usually polyp-development is the more chronic and is more often associated with bone disease. 3. Neither the polypoid swelling nor the polyps are factors in the bone involvement. This is simply a result of the chronic inflammation. 4. The changes in bone seem to take place more readily on the delicate walls of the ethmoid labyrinth than on the middle turbinate. 5. The inflammation can extend from one part of the membrane to another through the bone itself as well as through the openings in the same. It generally begins on the outer surface of the medial ethmoid wall.

Some authors have endeavored to show that polypi are always caused by an empyema of the ethmoid, but we believe that while these are frequently found together, the polypi exist entirely independent of the empyema, in fact are frequently the cause of the

latter. These polypi are simply the result of an inflammation of the mucous membrane, and are due primarily to the same causes which produced the general infection in the nasal mucous membrane. The attendant watery discharge is not solely from the membrane over the ethmoid but from the entire nasal surface. It is true it is liable to infection and may become purulent, thus giving rise to the idea that the polypi are the result of the suppuration, but in these very cases when the infection has subsided the discharge again takes on its watery character.

Some will say that these are cases of so-called latent empyema, where the patient has no trouble whatever for quite a while and suddenly through an infection or so-called cold, an exacerbation of the process takes place and we have an acute empyema on the base of a chronic one. These conditions, however, are entirely different, as in the empyema the patient is entirely free from symptoms during the periods of quiescence, and is troubled with secretion only during the stages of acute exacerbation, while in the case of the chronic ethmoiditis, non-suppurative, as we call it, the patient is never free from this discharge: only in the so-called latent periods, it is thin and watery in character. This is the form that Uffenorde describes under the name of "hyperplastic ethmoiditis."

Skillern has conducted a series of experiments and demonstrated conclusively from a pathological standpoint that this form of ethmoiditis occurs entirely distinct from the suppurative form.

Casselberry was evidently of this opinion regarding ethmoiditis when he described a simple edematous form as a forerunner of the suppurating and necrosing forms. However, in this case polypi were visible on examination; thus giving absolute evidence of the ethmoidal involvement. In the cases with which we have to do, frequently nothing can be detected but the thickened and edematous membrane on the side of the middle turbinate or ethmoidal wall, but in every one of our cases after infracturing the middle turbinate and opening the ethmoid, it was found filled with a mass of polypi. He sums up his observations as follows: "The sequence of events would then be first, simple myxomatous ethmoiditis which may assume as a variation the type of vaso-motor ethmoiditis with asthma, then nasal polypus, and finally suppuration of the ethmoid cells and of the collateral sinuses, by obstruction to their outlets, either by distinct polyps or myxo-degenerated tissues."

The method of development of this condition is as follows: In the course of an acute rhinitis the entire mucous membrane of the nose is affected. However, as the general process subsides, the

membrane covering the ethmoid wall and the outer side of the middle turbinate, owing to poorer facilities for drainage and existing hypertrophies from former attacks, does not regain its normal character, but under the constant irritation of the secretions undergoes a sort of hyperplasia. This spreads over the wall of the ethmoid and eventually involves the ethmoidal cells themselves. These cases are often described as vaso-motor disturbances in the nose. By others are called manifestations of hay-fever.

To the casual examiner nothing abnormal is to be seen in the nose except, perhaps, a somewhat soft and thick membrane on the edge of the middle turbinate. Because he can see no pus in the middle meatus or no polypi anywhere in the nose and because the chief subjective symptom is a profuse watery discharge, he excludes the idea of an ethmoiditis, and places the trouble under the blanket diagnosis of nervous excitability of the membrane or a vaso-motor disturbance.

**SYMPTOMS:** As a general rule the symptoms of a chronic ethmoiditis are not so pronounced as those of an inflammation of the maxillary or frontal sinus. Probably the most constant is the headache, frequently described as a burning or boring pain at the base of the nose, between the eyes, or it may be supra-orbital. In some cases this may radiate toward the temporal region. It may closely simulate a supra-orbital neuralgia. One case which came under my observation had suffered for twenty-two years with the most exquisite supra-orbital neuralgia. He had consulted various rhinologists and been told there was no cause for it in the nose. He had even had the supra-orbital nerve resected by a very eminent surgeon, but the so-called neuralgia persisted in spite of all this. After cleaning out the ethmoid fourteen months ago he was relieved and has had no trace of headache or neuralgia since. Frequently patients complain of a sense of fullness in the eye ball, pain on reading, spots in front of the eye, and especially increased tear secretion. Disturbance of the sense of smell is frequently complained of—the constant odor of burnt straw—or, on the other hand the sense of smell may be entirely lost.

Owing to the profuse secretion there is frequently an eczema around the edge of the nose. The secretion may be so increased that the patient will use half a dozen or more handkerchiefs a day, still there will be no stain on them as in the case of an empyema, the discharge being thin and watery.

Associated with ethmoiditis we frequently see asthma, pharyngitis, catarrhal affections of the middle-ear and Eustachian tube,

chronic laryngitis, etc. Uffenorde reports a case where a patient was referred to him with suspected tuberculosis of the larynx. General nervous symptoms even to the extent of melancholia may be referable to an ethmoiditis.

**DIAGNOSIS:** If we bear in mind the normal anatomy of the ethmoid and the mucous membrane lining it, the diagnosis of this condition is not a difficult one. From the symptoms above given, if we are suspicious of an ethmoiditis, examine the middle turbinal and if possible the meatus, the bulla and uncinate process. If there are no signs of polypi touch the membrane on the outer wall of the turbinal. If it is thick and edematous it is almost pathognomonic of ethmoiditis. Should the turbinal lie closely against the outer wall so that it is impossible to examine the meatus, thoroughly cocaineize the area and insert a Killian speculum into the meatus, spread the blades and fracture the middle turbinal at its base and deflect toward the septum.

We can now obtain a complete view of the meatus and ethmoidal wall, the bulla and infundibulum. Frequently a number of small polypi will be found in the meatus. Often the entire chain of symptoms, which before were absolutely unexplainable, such as pain in the eyes, increased watery secretion, headache, tendency to sneeze, asthma, etc., find an easy explanation when the middle meatus is open to view.

One of my cases showed nothing on examination but the thickened and soft membrane on the outer surface of the middle turbinal. On fracturing the turbinal and obtaining access to the meatus a polyp could be seen on the ethmoid wall. On opening this wall I found the entire ethmoidal labyrinth replaced by large masses of polypi. These gave no evidence of their presence except by the subjective symptoms and it was only after the turbinal was pushed to one side that they could be detected.

**TREATMENT:** Attention was called to the importance of this form of ethmoiditis by Casselberry, who, in a paper read before the American Laryngological Society in 1894 says: "Polypus is commonly one of the earliest prominent manifestations of ethmoiditis and where present the case should not be dismissed with a simple snaring as adequate to the occasion, but should be viewed as at least suggestive of a developing disorder, which is liable to culminate seriously unless controlled."

If the disease has progressed to the state where we have polypi which are visible in the meatus and infundibulum I think it is not sufficient to remove them with the snare or forceps or even to

cauterize the base, but we should look for and remove the cause. If the middle turbinal has undergone polypoid degeneration in its anterior portion I should by all means advise its removal, i. e. the anterior one-third, and then with a Hajek hook open the bulla. We now make use of Uffenorde's double curette or biting forceps and step by step, cell by cell, remove as much of the ethmoidal labyrinth as is diseased. As soon as we reach normal structure we stop *but not until then*. If this method be followed and careful exploration with the bent sound be made constantly during the operation, no mishap will result. The danger in such operations lies in scraping round in the dark with a curette or spoon. If one does not remove anything or attack any cell without seeing just what he is doing there is no more danger in ethmoidal surgery than in that on the outer sinuses.

In the diagnosis of this condition I explained the infraction of the middle turbinal and I prefer in most cases to make this a step of the operation and not unnecessarily sacrifice any portion of this bone. Of course, where the structure is diseased it is not only unnecessary, but wholly inadvisable to retain it. But we have a great many cases where this is not the case and the only sign we can see on examination is the thickened membrane on its outer wall. In these cases I think it more logical, more conservative, and of greater benefit to the patient to conserve this turbinal and simply infract and thus gain all the space necessary to complete the operation. When the cure has been effected the patient still has the turbinal intact.

I have operated a series of cases in this manner with excellent results and am confident that had I used this method sooner I should have retained a great many middle turbinas that I formerly partially amputated.

As this paper has already assumed greater proportions than I had intended I shall not add a list of my cases, but simply a few conclusions: 1. We have a form of ethmoiditis which exists without suppuration. 2. There may be no signs of this on examination except the thickened membrane on the outer wall of the middle turbinal. 3. When this condition exists, together with subjective symptoms, it is an indication for opening into the ethmoid. 4. Unless diseased, the middle turbinal should not be amputated, but infracted. 5. Removal of the contents of the ethmoid labyrinth should only be practiced under full vision with control of the nasal sound.

103 State Street.



## NASAL POLYPI.\*

BY CRAWFORD C. MC CULLOUGH, M. D., FORT WILLIAM, ONTARIO.

In speaking on this subject, I shall not attempt to offer you a pathological treatise, but, on the contrary, a brief consideration of the subject and that, chiefly, from a clinical standpoint.

A mucous polypus is a tumor-formation of the benign type, which, while not a pure myxoma, approximates so closely to this pathological distinction that it can be quite truthfully classed as such. In the polypus there is an excess of the fibrous tissue element over that of the pure myxoma. In many instances the adenomatous element is present, often to the extent of cyst-formation from closure of gland acini within the tumor; yet the structure, despite the excess of this or that element, is undoubtedly myxomatous. I prefer to call a mucous polypus, "a fibro-myxoma."

In an endeavor to satisfactorily explain the cause of polypus-formation, one must revert to the very beginning, viz., to the cause of tumor-formation itself; and this, so far as the present state of our knowledge goes, cannot be explained. Since tumor-formation then is as yet unexplained, any theory as to the true causation of a mucous polypus is to a high degree speculative. It is noteworthy that the theory most strongly advocated by any given rhinologist or "rhino-pathologist," if I may coin a phrase, is that which most clearly embodies the cumulative observations of an extended clinical experience. Clinical observation is inter-dependent with pathological, but at this writing, so far as the etiology of mucous polypi is concerned, the former outweighs the latter; our etiology is mostly based upon clinical evidence.

I shall not take issue with the claim that mucous polypi are frequently primary, for I am not prepared to prove that such is not the case. My own clinical experience, however, does not support this view, and since I have come to regard a polypus in the light of a symptom there has been a marked improvement in my clinical results from the standpoint of the permanent eradication of the growth.

Upon discovering the presence of a polypus or of polypi, two possibilities at once present themselves; either there is at bottom a primary hyperplastic condition in the underlying perosteum and

\* Read before the meeting of the Canadian Medical Association Section on Ophthalmology and Oto-Laryngology, Toronto, June, 1910.



bone, or there is a pre-existing catarrhal or suppurative condition in one or some of the accessory sinuses.

Further investigation is then directed to the elimination of one and the assumption of the other of these two possibilities. In some cases, particularly in a case presenting multiple polypi of large size, this is difficult to determine until sufficient of the growths have been removed so that a fair amount of room is provided for careful examination and exploration with the blunt probe. If it be an isolated polypus or a few small polypi with which we have to deal, the problem is per se less difficult. One is, after all, chiefly guided in making the assumption (1) by the situation of the growths, (2) the presence or absence of pressure upon the turbinal and (3) the subjective symptoms of the patient himself.

**SITUATION.** The three most common sites are; (1) the free border of the middle turbinal, (2) about the hiatus semi-lunaris and (3) above the middle turbinate.

The first of these sites suggests a more or less localized condition in which the underlying pericosteum is at fault. I say suggests, for it is quite possible that the turbinal contains supernumerary ethmoid cells in which a catarrhal or suppurative condition co-exists. The second site favors the assumption of a pathological process in the anterior ethmoid cells, the frontal sinus or the maxillary antrum. While the third site leads one to suspect posterior ethmoid mischief.

**PRESSURE UPON THE TURBINAL:** I consider this, in some cases, a prime factor in the etiology of polypus development. A deviated septum may so crowd the turbinal as to institute and perpetuate, if unrelieved, a passive congestion of the turbinal tissues which in turn leads to hyperplasia of the connective tissue element and a hydropic degenerative change in the mucous membrane. Yet again, the turbinal being crowded against the lateral wall of the nose, there supervenes a similar passive congestion which interferes with the aeration of the accessory sinuses and institutes in them a catarrhal condition which in turn produces polypoid formation both within and without the accessory cavity. If there be evidence of pressure upon the turbinal and the site of the polypi be the free border of this bone, it is strong evidence of direct vaso-motor disturbance of a more or less local character, and the seat of the trouble is most probably in the turbinal tissues themselves. If in the same event, polypi spring from the lateral wall of the ethmoid or the hiatus, it is again strong evidence of accessory sinus involvement.

**THE SUBJECTIVE SYMPTOMS OF THE PATIENT:** If the patient complain of dizziness, especially upon stooping, headache, and ocu-

lar irritability, polypi being present, one is led to suspect a primary sinus trouble. The treatment is surgical, for but little faith can be placed in injections of tannic acid into the substance of the tumor nor any kindred non-surgical procedure. The correct surgical treatment is that which, having in mind the pathological conditions present, most effectually eradicates the growths and prevents their recurrence.

In those cases in which the turbinal only is involved, the removal of the growths, preferably by the cold snare, is the first essential, and not only must one remove each growth in its entirety, but one must also remove the underlying tissues down to and including a portion of the bone; for there is invariably present, an underlying periosteal and bone involvement—the latter being as a rule a rarefying osteitis, though it may rarely be a true caries. The bone may be removed with biting forceps or by a curette. If the turbinal is found to be pneumatic, it should be explored for granulation tissue or caries; the presence of either of these is an indication for further and more radical surgical measures. The after-treatment consists in the maintenance of asepsis as far as possible, until healing is complete. Following this, if there be a septal deviation, a suitable operative procedure must be directed to its correction, otherwise the vaso-motor changes continue and new polypi occur.

When the infundibulum and the hiatus are involved, the first step is the removal of the growth followed by the curetment of the underlying periosteum and bone. Next a careful objective search should be made for any evidence of antral, ethmoid or frontal sinus mischief. Even if this investigation prove negative, it is no positive evidence that it is such. This is particularly true of those cases in which the subjective symptoms have been partially those of accessory cavity trouble. In these cases more particularly, and in fact, in any case, I have no hesitation in opening, under aseptic precautions, into a lateral ethmoid mass for the purpose of exploration. Upon doing this it will generally be found that additional polypi are present within the cells. All diseased cells should then be enterated. If the frontal sinus is found to be the seat of a catarrhal or purulent condition, the case becomes one of frontal sinus disease, the subsequent surgical procedure being directed to the relief of this condition. The antrum of Highmore must not be overlooked as a possible seat of primary trouble. There should be no hesitation in doing an exploratory puncture of this sinus for the purposes of diagnosis. If polypi are present in the antrum itself, the Caldwell-Luc operation is indicated.

In those rare instances in which there is no demonstrable involvement of any of the accessory cavities, there will usually be found a much narrowed middle meatus due to encroachment of a displaced or enlarged middle turbinate. Surgical measures should be directed to the relief of this condition according to the cause; a deviated septum should be put straight, an enlarged middle turbinate should be partially or wholly removed. In the case of a pneumatic turbinal, a sub-periosteal removal of the shell may be done—the periosteum being placed against periosteum and allowed to heal. By this method the mucous membrane is preserved while the pressure is relieved.

When the polypi are situated above the middle turbinate, we are confronted with a more difficult problem. In this situation, almost invariably it will be found that the posterior ethmoid cells are diseased, and quite possibly, through continuity of tissue, the sphenoid sinus also. Here the preliminary step is the removal of part or all of the middle turbinal. Following this, the polypi are removed and exenteration of the posterior ethmoid cells ensues. If the sphenoid be diseased, surgery of this cavity is in order.

In making a mental review of the frequency of these various conditions, I am of the opinion that in the majority of cases we have primarily to deal with, as Woakes terms it, "A necrosing ethmoiditis."

In conclusion, may I remind you of the enormous size to which mucous polypi sometimes attain. About a year ago I removed three of enormous proportions from the left nose of a girl aged 18 years. The anterior growth protruded from the anterior naris; it completely filled the vestibule and its pedicle was attached to the hiatus. The middle one was attached to the infundibulum and completely moulded itself to the concavity of a markedly bowed septum; while the posterior growth, having a long slender pedicle, completely filled the naso-pharynx and hung in the oro-pharynx as low as the apex of an edematous uvula. In each of these growths the fibrous tissue-element was in marked excess. The primary lesion was an extensive "necrosing ethmoiditis."

101 Dominion Bank Building.

## GENERAL ANESTHESIA IN OPERATIONS IN THE PHARYNGEAL REGION, AND ABOUT THE NECK.

BY MYRON METZENBAUM, M. D., CLEVELAND, OHIO.

The anesthetic is the complement to an operation. While all anesthetics are essentially governed by the same general rules, yet the anesthetic for operations in the pharyngeal region, and about the neck, differ in many important points. These operations are largely upon children, many of whom are below par, frail, delicate, with obstructed breathing, general glandular enlargement, anemic, rachetic and some with an enlarged thymus gland.

Infections of the adenoids, tonsils and cervical glands have kept up a mild toxemia, which has taxed the kidneys, heart and liver. Operations in the pharyngeal region, necessarily interfere with and obstruct breathing. The flowing blood sometimes actually plugs the respiratory tract. Depression of the base of the tongue, and manipulation of the region of the pharynx may induce reflex stimulation of the branches of the superior laryngeal nerve and through it the vagus nerve; producing interference with and even stoppage of the heart.

In researches conducted in Chile's laboratory, we were able to prove that when atrophin sulphate was administered hypodermically in physiological doses to dogs, that it prevented reflex stimuli coming through the superior laryngeal nerve or vagi and interrupting the heart's normal action. The clinical application of this result was likewise conclusive. A 1-200 gr. atropin sulfate administered to a child or 1-100 gr. to an adult insured greater safety in performing intubation, tracheotomy, bronchoscopy or operations in the pharyngeal region.

Sollman has shown that in dogs atropin prevents the sudden paralysis of the heart ganglion from chloroform. Physiologically, hyoscine hydro-bromide or what is the same, scopolamine, may be considered as made up of two radicals, one identical in its action with atrophine, the other radical similar in its action to morphine.

In the past ten years I have given 1-200 gr. of hyocine hydro-bromide by hypodermic or 1-100 gr. by mouth 800 times preliminary to general anesthetics. Clinically, the following may be said for it: That the patient is partially under an anesthetic and that there is less psychological fear. Ether, chloroform, or nitrous oxide oxygen,

is taken more quietly and a smaller amount is required. The heart ganglions themselves are safeguarded against chloroform poisoning. In operations about the neck, particularly on the thyroid, the larynx and pharynx, there is less danger to the heart centers from reflex inhibition. After the operation the patient is quiet for he already has his anodyne. The salivary and bronchial secretions are held in check.

In Cleveland the nitrous oxide oxygen anesthesia has been thoroughly developed, until it is used extensively for prolonged anesthetics for general major surgical work. When given by the expert it is the safest anesthetic, for it exerts but slight present or remote effects on the heart, kidneys or liver. The patient comes immediately from under the anesthetic, and nausea is rare. It permits of operating on the patient in a sitting or reclining posture. Its general use is retarded by its cost and by the lack of experts to administer it.

Chloroform possesses greater anesthetic potentiality per volume than any other anesthetic. It is a too heavy anesthetic and until it can be combined with some innoxious substance it will always remain treacherous, for its action is too precipitous, its elimination far too slow.

Horsley has shown that chloroform depletes the brain, producing anemia, and thus acts as a hemastatic in brain-surgery. It is this same anemia extending to the vital centers in the brain which endangers life.

Ether, the American anesthetic, in our country still holds the field for general use and safety, for it can be most readily administered by the largest number of physicians, to the greatest number of patients.

By what I have termed the "Open Drop Method," or "Ether Air Anesthesia,"\* ether can be administered so as to nearly fulfill all the requirements of our present standard.

Just as the public and general practitioner select the special surgeon to perform operations about the head and neck, so it becomes the duty of the nose and throat surgeons to select a skilled anesthetist, thereby giving the patient the service he seeks. By doing so, we insure the safety of our patient, and our own work will not be minimized, nor our operations jeopardized.

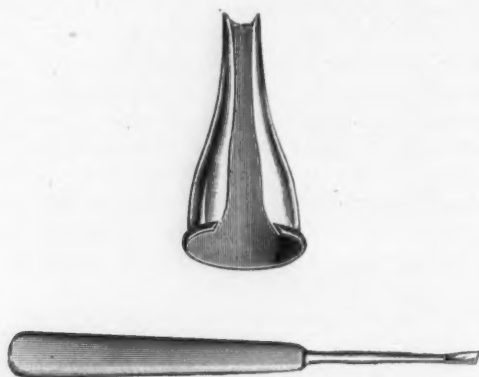
\**Jour. A. M. A.*, Nov. 17, 1906.

768 Rose Building.

## A MODIFIED AURAL SPECULUM ESPECIALLY ADAPTED FOR INCISION OF THE EXTERNAL CANAL.

BY D. C. SMYTH, M. D., BOSTON.

In otitis externa diffusa where it is desirable to make a number of parallel incisions in the canal, I have found this speculum very useful. It consists simply of an ordinary speculum with a simple modification, in that it has a slit running from end to end. With it the procedure of incising the canal can be made more of a surgical one, for the reason that any number of parallel incisions can be made on a perfectly visible field by simply rotating the speculum after each incision; the pressure of the instrument in the canal



checking the bleeding perfectly, so that the last cut is made with as clear a view as the first, the membrana tympani being seen during the whole operation. This also prevents the incisions from running into each other and leaving a hanging tag of canal as often happens after incising the canal blindly.

The knife shown in the print works well with it, as it can be placed against the drum without injuring it; the incisions being made with one outward sweep of the knife.

For cocaineization of the middle-ear with the Neumann hypodermic syringe the speculum is useful, as it gives a good view of the field for insertion of the needle.

127 Newbury Street.

## SPECIAL EDITORIAL DEPARTMENT

### LARYNGEAL, BRONCHIAL AND ESOPHAGEAL ENDOSCOPY.

EDITED BY

CHEVALIER JACKSON, M. D.,  
PITTSBURG, PA.

- 1. Unusual Foreign Body in Right Bronchus Removed by Lower Bronchoscopy.** CHARLES W. RICHARDSON, M. D., *THE LARYNGOSCOPE*, October, 1910.

A round-ended rubber eraser from a pencil-top was aspirated by a young woman during an epileptic seizure, and lodged in the orifice of the right bronchus, which it occluded so completely that breath-sounds were absent over the entire right lung. No forceps with sufficient spread of jaw being available, Dr. Richardson used a screw-ended instrument which removed the foreign body. The problem presented was that of a cork fitting tightly into a bottle, and the principle of the ingenious removal was that of a cork-screw.

- 2. Cutting in Two of a Large Steel Pin While Transfixed in the Left Bronchus. Removal.** W. E. CASSELBERRY, M. D. *Jour. Amer. Med. Assoc.*, July 2, 1910.

The author points out the danger of the misleading negative radiograph. The problem presented was that of a young woman who aspirated a glass-headed steel pin, which became transfixed into the left bronchial wall, while the head of the pin occupied a branch bronchus. The pin could be seized but could not be withdrawn without probably fatal traumatism. Dr. Casselberry resisted the temptation to pull out the pin by main strength, and carefully planned a pin-cutting forceps which, not only cut the pin, but held the two pieces, preventing their loss in the deeper air-passages.

Both the foregoing cases illustrate the fact that the endoscopic extraction of a foreign body is a mechanical problem pure and simple. A bad mechanic will either fail to remove the foreign body or will kill the patient or, alas, will do both, as has already happened a number of times, to the undeserved discredit of bronchoscopy and esophagoscopy. Being a mechanical problem it can be best illustrated by reference to every day experience in mechanics,



For instance, a cap-screw is broken off flush with the surface of the cylinder of an automobile engine. The repairman who is not a mechanic will pound away with a punch in an effort to turn the screw out. He breaks the entire engine casting by hasty ill-planned or rather unplanned, efforts at removal. The good, careful mechanic will carefully cut a slot in the broken screw. This slot will enable him to use a screw-driver, by means of which he will remove the screw without damage to the engine, in less time than it took the unmechanical repair man to ruin the entire engine. The editor has been a sad witness at a fatal mutilation of the bronchus in a poorly-planned and badly-executed attempt at removal of an impacted foreign body by one of the ablest laryngologists in the United States. He worked on the basis that left in situ, the foreign body would be fatal; consequently, any violence in removal was justifiable. The basis is indisputable, but the inference is erroneous.

Drs. Richardson and Casselberry are to be congratulated on their careful, thoughtful, well-planned original procedures. Like all endoscopic instruments, these special ones can very readily kill, instead of cure. Both instruments will likely be carelessly manufactured so that they will not do the work of the original models.

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#### **Pure Atrophic Ozena of the Eustachian Tube and Middle-Ear.**

COMPAIRED. *Rev. Hebdom de Laryngol. d'Otol. et de Rhinol.*,  
Oct. 15, 1910.

CompaiRED distinguishes this from atrophic ozena of the tube and the septic suppuration due to the infection of the nasal chambers. The development of atrophic ozena of the tube and middle-ear is ordinarily very slow, but when the nasal disease is of long standing, it may make rapid progress. The prognosis is always unfavorable as there is unfortunately no curative treatment.

The treatment should be applied to the cause of the infection in the nostrils. The ears should be gently inflated with iodized ether. The Politzer bag or catheter should never be used, not only on account of the danger of rupturing the weak tympanic membrane, but also on account of the danger of increasing the infection.

SCHEPPEGRELL.

## SOCIETY PROCEEDINGS.

### NEW YORK ACADEMY OF MEDICINE.

#### SECTION ON LARYNGOLOGY AND RHINOLOGY.

*Regular Meeting April 7, 1910.*

JOSEPH H. ABRAHAM, CHAIRMAN.

#### **Symposium on the Recent Progress in Knowledge and Treatment of Diseases of the Upper Respiratory Tract.**

**I. The Nose and Nasal Accessory Sinuses.** By H. L. SWAIN, M.D.  
*Published in full in the August, 1910, issue of THE LARYNGOSCOPE, p. 771.*

**II. The Pharynx.** By WILLIAM K. SIMPSON, M. D.  
*Published in full in the August, 1910, issue of THE LARYNGOSCOPE, p. 783.*

**III. The Larynx, Trachea and Bronchi.** By S. YANKAUER, M. D.  
*Published in full in the August, 1910, issue of THE LARYNGOSCOPE, p. 788.*

#### DISCUSSION.

DR. HARMON SMITH: There are times when the assumption of conservatism relative to any given disease or operation may be construed as progress. I believe that a conservative consideration of sinusitis is now more advocated than aggressive operative methods. It is the routine of my clinic to give the patient with purulent sinusitis every benefit of internal treatment first, and of internal operation second, before proceeding to any external methods. This procedure is adopted in every case except when the ethmoidal or frontal sinus abscess has perforated into the orbit. Then immediate operation is performed.

Even when this has happened, I have been able in one case to operate internally so that the ethmoidal and orbital condition have recovered. The periostitis and general fibrosis following some of the more radical operations is more painful and more disagreeable than the previous purulent condition, which should lead us to endeavor to evacuate the pus with the least possible destruction of tissue.

The dangers of neglected sinusitis must be exaggerated on our part when some of our elder observers can recall no cases of death resulting therefrom and not until present operative measures were in vogue did they see fatal cases. Of course it has been only

recently that post-mortem examination has been directed to the sinuses as a cause of meningitis resulting in death. Abscesses at the base of the brain from sphenoidal or ethmoidal infection have been noted by many observers, and operation for the same performed by St. Clair Thomson and others.

As regards the comfort given the patient no operation upon the nose exceeds the perfected sub-mucous resection. That we are overdoing it is the criticism of many observers. That we should perform the operation when there is a tendency to atrophic conditions I believe is open to argument. That we should perform it in children under 14 years I believe to be bad surgery subject to severe criticism. That we should do it in old people depends largely upon their vitality and the nature of the obstruction.

The relation of nasal lesions to eye manifestations is a subject as yet undeveloped but capable of being simplified greatly to the good of both the eye and nose specialist.

The close relation of the optic nerve to the sphenoidal and ethmoidal sinuses makes it easily apparent that infectious or tumorous involvement of either of these localities is reasonably sure to affect the nerve closely adjacent. I believe that we shall find more and more eye conditions directly traceable to nasal lesions. Some of these conditions we have been familiar with for a number of years, but optic neuritis as a complication of empyema of the sphenoidal sinus is of comparative recent consideration, and operative procedures upon this sinus for the relief of optic neuritis are among our most recent surgical methods. The question of import to the nose specialist is whether he is justified in entering a sphenoid sinus without symptoms of involvement for the relief of the optic neuritis when the eye specialist has eliminated all other causes but this for the occurrence of the neuritis.

Our means of diagnosis of sphenoiditis is limited, and no man can say with assurance that no periostitis or hyperemic condition exists in the sinus until it is opened. The mere depletion incident to operation on this sinus has been known to affect optic neuritis favorably, so that the oculist frequently insists that this last measure for its amelioration be performed, irrespective of the absence of visible sphenoid involvement.

DR. L. A. COFFIN said that he had been much interested in two points brought up by the reader of the paper, and recited the history of a patient whose antrum had been chronically involved and had been operated upon by the conservative intra-cranial method, and still suffered week after week. Her husband was a friend of

Dr. North, and wanted the massolin tried, and it was used in solutions and spray for weeks, until every one was tired, and there was no result whatever. A radical operation was then performed by Dr. Coffin, and the antrum became well and there has been no pus since. He could hardly understand the examples that had been cited, and it was a question in his mind how much the massolin had to do with the results attained.

There was one thing he wanted to say about the conservatism so much spoken of. If it means the preserving and conserving of the mucous membranes and taking care of colds, we are all conservative to the utmost. If it means that there is disease somewhere and we do not know where it is, and just stand still and let it alone, he is not conservative. The thing we are interested in is searching for the disease wherever it may be. In his opinion the disease can be reached more readily by the external than by the intra-nasal method. He would prefer to try the radical operation first, and the intra-nasal method afterward, if it seemed necessary. He would leave the mucous membrane, and if the patient improves you have a good functioning organ. In an acute sinusitis it is altogether preferable to open it externally rather than by the intra-nasal method. In the latter treatment you must take off the middle turbinate, and all the mucous membrane that you want to conserve. He believes in the radical operation in chronic cases. This seems to be a season especially favorable for sinus cases. He had just operated on a case of supra-orbital abscess, where he had to do the radical operation.

It is the same thing about the avenues through which the infection can be examined—trans-illumination was a great advance, the x-ray was another great advance. We can open up the nose by cocaine and adrenalin, x-ray it, trans-illuminate it, and still be in doubt.

DR. LEWIS A. FRISSELL: In discussing the mouth and pharynx before the laryngological section a medical man's function is obviously to confine himself to general diseases arising in these cavities, but in a consideration of the lymph nodes of the oro-pharynx as a portal of infection a brief resumé of the anatomy is necessary. The tonsil, to take the best known of the pharyngeal lymph nodes as an example, has as its unit the lymph follicle covered with mucous membrane and subdivided by infoldings of this membrane, the lining epithelium of which is in many places deficient. Otherwise the structure is in all respects that of an ordinary lymph node except as regards its lymph channels. Efferent vessels are present, but

afferent are absent, their place is, however, to some extent taken by the deficiencies in the lining mucous membrane of the crypts which are thus in direct communication with the inter-follicular lymph channels.

The distribution of the lymphoid tissue in the pharynx is peculiar. We find the combined opening of the digestive and respiratory tubes almost completely surrounded by lymph tissue, the so-called "Ring of Waldeyer," composed of pharyngeal, faucial and lingual tonsils and a lateral pharyngeal chain on each side. Thus at a point where ciliated epithelium is not yet present to protect by sweeping out invading micro-organisms and the protective action of the saliva in inhibiting bacterial growths<sup>1</sup> is no longer present, we have this curious formation of lymph tissue encircling the whole entrance to both digestive and respiratory tracts. This brings us at once to that moot point, the function of the tonsil and pharyngeal lymph tissue, which may be approached from several sides. That it is not a vestigial remnant the work of Retterer<sup>2</sup> seems to prove. It is not existent in reptiles until the crocodile stage is reached and attains great complexity only in the higher mammals. Presumably a recently acquired organ has some function. The natural supposition is that it shares the function of lymph glands in general in the formation of lymphocytes and in protecting the body against the invasion of bacteria. Wood and Ravenal<sup>3</sup> have tested the bacteriolytic action of an emulsion of tonsil with negative results. They attribute their failure to find such properties to a removal of antibodies by rapid absorption into the blood and lymph streams. The question as to how the tonsil may act as a portal of infection may perhaps be answered as follows:

1. Through the blood-stream, a local affection of the tonsillar mucous membrane, such as diphtheria or follicular tonsillitis, produces in a few hours marked constitutional disturbance. This is most readily to be explained by the assumption of a speedy absorption of toxins through the vascular walls directly into the blood-stream and is well exemplified by the difference in constitutional disturbance of pure laryngeal and pharyngeal diphtheria. In the first case the constitutional disturbance is comparatively late, in the latter case early. In this connection, however, it must be remembered that Adami and his pupils believe that bacteremia is much more common in local disease than has ordinarily been supposed.

2. Infection through the lymph stream. This is probably a somewhat more uncommon method, though some infection takes place in the majority of cases of tonsillitis as evidenced by the en-

largement of the gland at the angle of the jaw and sometimes of the deep cervical chain. Goodale,<sup>4</sup> Hodenpyl,<sup>5</sup> Hendelsohn,<sup>6</sup> Wood,<sup>7</sup> and others have worked upon this subject and prove that foreign material, carmin, ink, etc., can be absorbed from the tonsillar mucous membrane and crypts and found in the tonsils and lymph glands within a short time after injection. Wood, in particular, has made careful injections and dissections and finds a gland constantly situated just below the anterior border of the sterno-mastoid where it is crossed by the posterior belly of the di-gastric muscle. The superficial glands are not involved and the further connection is with the anterior chain of deep cervical glands finally emptying into the jugular lymph trunk and so into the junction of the jugular and subclavian veins.

Obviously, bacteria can much more readily follow the lymph channels than such gross materials as carmin and ink, and often pass through the mucous membrane and faucial lymph tissue without local lesion to find resistance farther down in the lymph glands. This point has been well proven in studies on infections of the bronchial and mesenteric lymph nodes without antecedent disease of lung or intestine. It seems equally reasonable to attribute disease of the cervical glands to infection through the various drainage areas of the glands involved.

The diseases which gain access to the body through the oropharynx may be divided in two main types. 1. Those local infections which cause constitutional disturbance by toxic absorption, of which diphtheria is the best example and which needs in this connection no further explanation. 2. Those diseases caused by an invasion of the body by bacteria. Of these the most common are tuberculosis and the various forms of septic invasion of the body by pyogenic organisms. Rheumatism may perhaps be caused either by toxin or bacterial entry. We have no definite proof of either but strong evidence of the existence of one of these etiological factors.

The status of the tonsil and the pharyngeal lymph tissue in its relationship to tuberculosis is one of great interest and has been approached both from the side of local tonsillar disease in pulmonary tuberculosis and in the etiological relationship of the faucial lymph tissue to cervical gland tuberculosis.

As would be expected in the case of organs with deep recesses constantly bathed with tuberculosis sputum, the condition obtaining in the tonsil in the presence of advanced pulmonary tuberculosis, a large percentage of the cases show tuberculous tonsils. Strass-

man<sup>8</sup> finds the tonsils tuberculous in thirteen out of fifteen autopsies on tuberculous subjects, Domockowski<sup>9</sup> in every one of fifteen cases, Wood in a report from the Phipps Institute in twenty-nine out of thirty-seven cases.

The evidence of cervical gland infection through faucial invasion but without local lesion is less direct but inferentially scarcely less clear. Animal experimentation shows that after inoculation at any point in the periphery with tuberculous material either a local lesion may result or the nearest lymph glands become tuberculous. Feeding experiments by Baumgarten<sup>10</sup> and Fessler<sup>11</sup> prove that after ingestion of tubercle bacilli even with an intact mucous membrane the lymph follicles of the gut are first affected and later the mesenteric glands. Only with the ingestion of large amounts of virulent bacilli are local lesions produced. Primary bronchial lymph-node tuberculosis is likewise produced by inhalation of dried tuberculous sputum. We thus see the possibility of the passage of the tubercle bacillus through the rectal mucous membrane. In children gland tuberculosis plays a very important rôle. Wohlgemuth<sup>12</sup> finds that in children under ten, sixty per cent suffer from tuberculous glands. In an analysis of four hundred and thirty cases, the same author finds that in ninety-three per cent the cervical glands were affected. Following our rule in case of infection of a lymph gland to regard its drainage area as the portal of infection we inevitably reach the conclusion that the oropharynx and particularly its lymph tissue is the site of invasion. Recent work by Grobe,<sup>13</sup> Beitzke,<sup>14</sup> and Wood<sup>3</sup> shows the occasional presence of a supra-clavicular gland which has connection with the cervical chain and hence an indirect possibility of apical involvement from the tonsil. This, however, must be a rare occurrence as the connection is not a regular one.

Septic invasion of the body has been reported in many cases by different authors. Stengel,<sup>15</sup> Woodcock,<sup>16</sup> Adler,<sup>17</sup> Oten,<sup>18</sup> have all reported septicemias, some fatal, which have originated in tonsillar infections. In these cases in all probability, the infection is due to a direct passage of bacteria into the blood-stream.

Endocarditis, nephritis, pneumonia, pleurisy, meningitis, phlebitis, skin and eye lesions have all been reported many times as having an etiological relationship to tonsillar infection. Forchheimer<sup>19</sup> even reports appendicitis and five cases of an infectious jaundice resembling Weil's disease, following tonsillitis. The infecting organism varied, streptococci, yellow and white staphylococci were present.



Rheumatic fever has long been associated in the clinical mind with tonsillar infections. With the work done to establish a definite bacterial etiology for rheumatism the tonsil has come in for its share of investigation. Fritz Meyer<sup>20</sup> isolated from twenty-five cases of rheumatic tonsillitis a diplococcus which produced an arthritis in rabbits. Frissell<sup>21</sup> isolated from a rheumatic throat a coccus which regularly produced in animals a polyarthritis. The clinical association between the two conditions has long been noted by very many different authors.

The direct proof of cause is lacking in a disease where a definite specific organism has not yet been isolated, but the clinical connection is so strong that we must consider the pharynx and tonsil as an ordinary portal of infection. Whether the disease is local and the absorption of toxins is responsible for the articular symptoms, or as Poynton and Payne believe, the organism circulates in the blood and lodges in the joints, one must assume either a special branes.

Gurich<sup>22</sup> in an interesting monograph claims to be able, particularly in chronic cases, to differentiate articular disease of tonsillar origin from other forms, by tonsillar therapy which consists in surgically opening all existing crypts and emptying the cheesy particles of pus. This is followed by an arthritic exacerbation which the author claims is proof of the inter-relationship of the two conditions. The reaction occurs on the third or fourth day and is followed by remission or cure of symptoms. Treatment is continued until all crypts have been opened and kept open. His results follow, one hundred and forty cases of rheumatism, of which twenty-three failed to react and were thrown out as not of tonsillar origin. Of the remaining one hundred and two cases which showed reaction, ninety-eight were completely cured. Many cases were of long standing. There remain for discussion the exanthemata in which throat symptoms form so important a part that it seems reasonable to postulate a throat infection. Of these, scarlet fever and measles stand out prominently. As we are ignorant of their etiology further discussion of the mode of invasion is profitless.

Finally, there are that group of cases which many believe to be secondary to long standing sources of irritation in the mouth or pharynx. Thus gastritis, pernicious anemia (Hunter) may be in some instances due to slight but constant absorption of pus organisms from small local foci such as may exist around the roots of teeth or deep in the tonsillar crypts without evidence of local trouble unless unusual care is taken in the examination.

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DR. CHARLES A. ELSBERG said that if one surveys the field of diseases of the trachea and bronchi, the greatest advances will be found to have taken place in our knowledge of affections of the bronchi, and this—as has been stated by Dr. Yankauer—is due to the bronchoscope. Much has been accomplished by this instrument, and much more will be done with it in the future. Dr. Yankauer was the first to use the bronchoscope in New York. Dr. Elsberg then reported a number of cases in which he had removed foreign bodies from the bronchi by means of the bronchoscope. He said that every laryngologist should be a bronchoscopist, for the surgeon had the right to expect that in the future the laryngologist working with the bronchoscope, would teach the surgeon much about intra-thoracic conditions, and would, therefore, aid in the development of intra-thoracic surgery.

Dr. Elsberg referred briefly to the methods now in use to prevent the collapse of the lung with its consequent dangers when the normal thorax is opened by the surgeon. He referred especially to the method of intra-tracheal insufflation recently described by Meltzer and Auer, which had been tried on animals by Meltzer and Auer, by Carrel, and by himself. Before the method was applied to the human being the technic had to be worked out, and in this the previous experiences with bronchoscopy were very valuable. Since we knew that a bronchoscopic tube could remain in the trachea for twenty to thirty minutes or more and do no harm, we felt that it was safe to introduce a soft rubber tube into the trachea. Already

several intra-thoracic operations have been done in Mt. Sinai Hospital by means of the method of intra-tracheal insufflation.

DR. E. MAYER said that the statements of Drs. Swain and Coffin which seemed to differ radically from each other, were, after all, not very different; for all of us will agree that our general rule is conservation where we may, with the courage to do and dare when necessary. In the presentation of the Hay's pharyngoscope, Dr. Simpson had called attention to the use of soap to prevent condensation on the small mirror. He would like to suggest the use of a little lysol, which does not smear the lens and answers every purpose. Dr. Simpson had also spoken of Vincent's angina, and the speaker felt that perhaps it was Dr. Simpson's modesty which prevented him from calling attention to the fact that the first presentation of the knowledge of Vincent's angina in this country was made in these halls at the time when Dr. Simpson was presiding officer, in the shape of papers by the speaker and Drs. Sobel and Hermann. This was the first time this subject had ever been presented in the English language. The speaker emphasized the importance of a knowledge of Vincent's angina to the general practitioner; for if a hasty diagnosis of a specific lesion be made, the patient will be doomed to a long period of medication unnecessarily. Dr. Swain spoke of suturing the interior turbinate and the speaker recalled a conversation with the Nestor of laryngology, Prof. Bernard Fraenkel, when, in showing him the ingenious suture method of Yankauer, the old gentleman said, "Thank God that somebody is doing something else toward repair of the diseased turbinate other than the indiscriminate removal." Regarding the use of the bronchoscope he could only say that he believed it would not be long before every laryngologist would be expert in its use to the great advantage of suffering mankind.

DR. CHAPPELL said that he did not believe in the so-called radical operation for acute diseases of the accessory sinuses. For the chronic disease, if the infection be mild, we may depend upon intranasal measures, for relief. If the infection is of long standing, we should have the more radical external method. He had not heard Dr. Yankauer speak of laryngeal rest. That is a very important method of treatment in laryngeal papilloma. He has seen two disappear in three months under complete rest. There is nothing so effective in the treatment of recurrent papilloma of children as complete rest by tracheotomy. He regretted that they could not have heard more from Dr. Frissell of the effect on general conditions produced by pharyngeal infections. That is one of the most interesting points that any practitioner can consider.

DR. SIMON BARUCH said that he had availed himself of the large number of specialists assembled here, to ask an expression of opinion as to whether it be safe to entrust the ordinary person with the nasal douche for prophylactic purposes, and whether, if they be safe, such measures will prevent colds.

DR. SWAIN, in closing the discussion, thanked the gentlemen for having treated his paper with such courtesy. He had been much pleased at what Dr. Smith had said about the removal of mucus from the membranes, and he wished that this point could have been more emphasized. He himself had often endeavored to impress its importance. It is not right to take a patient into your office, wash all the mucus off the membrane, and then send him out in the cold with the unprotected membrane and expect him to be improved. It is the worst thing we can do for our patients, and yet it is often forgotten in treating cases.

Referring to what Dr. Coffin had said about massolin, he could only say that the case he reported had gone from August to December without any change, and two weeks' treatment produced the great improvement described. He felt sure that in this case, massolin deserves the credit.

Referring to what Dr. Yankauer had said about tuberculous laryngitis, etc., supplemented by rest, as suggested by Dr. Chappel, it is possible to secure great benefit in tuberculous laryngitis cases, where the patients have been sent to the sanitarium and still have a lesion in the larynx, or have remained at home, by the injection of very mild and slowly increasing doses of tuberculin. To his knowledge this treatment has proven curative and in at least one case, has remained so for the past three years. Others are being much improved. As Dr. Yankauer had suggested, in cases of tuberculous laryngitis, we are justified in bringing on an abortion in cases of pregnancy,—but in one of the cases referred to, the patient was pregnant, and was allowed to go to term. She has gained seventeen pounds in weight, and from being voiceless and unable to swallow, she can now speak so as to be heard all over the room. This improvement has occurred since the birth of her child, and under this tuberculin treatment.

He had not quite understood Dr. Elsberg, but more can be said about thoracotomy than has been said, and the positive pressure mask has a future before it. As in the apparatus of Willy Meyer, the anesthesia and air-pressure have been found to be sufficient for the opening of the thorax. The mask has been used on animals and on human beings at New Haven with perfect success. It is something of a revelation to see the comfort and ease with which the anesthesia is accomplished with a positive pressure mask.

## NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

*Regular Meeting, April 27, 1910.*

JOSEPH H. ABRAM, CHAIRMAN.

### PRESENTATION OF PATIENTS.

#### **Bone Cyst of the Septum.** By SAMUEL McCULLAGH, M. D.

This case is reported on account of its rarity, if not uniqueness. Kate C., aged 15 years, Italian parentage, presented herself, May 10, 1909, at the clinic of Dr. Coffin at the Manhattan Eye, Ear and Throat Hospital, complaining of nasal obstruction.

Examination revealed a globular swelling high up on the septum opposite the middle turbinate, involving the whole breadth of the septum. The protuberance was more marked in the right nostril. Examination with the probe proved it to be of firm consistency. There was polypoid degeneration of both middle turbinates. The nasal bridge was broad and flattened. The diagnosis of *gumma of the septum* was made and active anti-syphilitic medication was instituted.

The patient was seen after two months of this treatment with no change in the septal tumor though symptoms of ethmoiditis were now marked. The patient's mother was seen for the first time, and the broad, flat nose was observed to be a family peculiarity.

On October 4, 1909, the right ethmoid cells were removed by Dr. Coffin with a Ballinger ethmoid knife. October 11.—Left ethmoid cells removed by the same method. October 18.—A few polypi removed from the right side. November 9.—Operation on septal tumor. A vertical incision was made through the mucous membrane and perichondrium of the septum, and this was dissected off over the tumor. The perichondrium near the anterior border of the tumor was very closely adherent and did not strip, but had to be cut away from the underlying cartilage and bone with a sharp elevator. Over the body of the tumor it stripped easily. It was now apparent that we were dealing with a bony tumor. In testing the bone with a submucous elevator, the wall of the cyst, which it proved to be, was broken through. There was no fluid contained. This wall was very thin at the equator of the mass, resembling the bulla ethmoidalis, but very dense at the poles, where the bone forked. The whole bony wall of the cyst was removed with cutting

forceps and curette. The flap was approximated and packed into place. Healing was uneventful. The location of the greater part of this cyst was in the perpendicular plate of the ethmoid, but the anterior one-fourth to one-third was in a position normally occupied by the triangular cartilage.

**Epithelial Tumor of the Middle Turbinate.** By SAMUEL McCULLAGH, M. D.,

My object in reporting this case,—which has already been referred to by Dr. Jonathan Wright, in a paper entitled "Theories and Problems of Heredity" (*New York Medical Journal*, May 20, 1909), is that it may be in a more available position for reference for those interested in the pathological conditions arising in the nose.

Jacob K., aged 47 years, Russian, referred from Ear Department to the clinic of Dr. Coffin, at the Manhattan Eye, Ear and Throat Hospital. Nasal operation in Russia six weeks ago. Character undetermined. First nasal trouble 18 months ago, a nasal stenosis which came on gradually. Unable to eat or sleep.

EXAMINATION: On the left side there was a large polypoid mass filling the whole naris. It hung down from the middle turbinate attachment like a curtain and on the floor curled up upon itself. The septum was deflected to the right. The mass was removed with a snare, in two pieces. The bleeding was very free and persistent, necessitating packing. On each removal of the packing the bleeding recurred, so that the nostril had to be packed for more than a week.

PATHOLOGICAL REPORT:—Microscopic Examination: This is histologically a very interesting growth. Slides were submitted to Dr. Hodenpyl, who pronounced it a typical epithelioma, and to Dr. Murray, of the Hoagland Laboratory, who called it a papilloma, with no appearance of malignancy. I think we have here a proliferation of the surface epithelium, which consists of columnar ciliated epithelial cells. In places they are preserved in a fairly normal condition. Elsewhere they have enormously multiplied, dipping down into the stroma, but for the most part fairly distinct from it, and elsewhere involuted into forms resembling an adenoma, yet plainly not springing from the glandular epithelium. These masses of epithelial cells everywhere on the free surface retain their cilia. In their layers are many multinuclear leucocytes, some of which have been swallowed up by the lymphocytes, which have also invaded the epithelial layer. The nuclear fragments seem to be free in the epithelial layers. The stroma is loose and edematous. At



the anterior end of the growth the tissue is almost altogether made up of the epithelial hyperplasia. Further back along the middle turbinate this has entirely disappeared, and we have the ordinary structure of an edematous nasal polyp. So far as I can see, there is no irregularity in the karyokinesis of the epithelial cells and however such growths may be classed by pathologists, I am not disposed to regard this as necessarily malignant. The sudden transition of normal growth epithelium into abnormal at some points on the surface is very striking. At the posterior extremity of the tissue, where the stroma is very little encroached upon by the epithelium, we still have very short stretches of surface isolated one from the other where the usual ciliated columnar cell suddenly assumes the hyperplastic form, and is no longer a true type. Apparently these are independent foci of the proliferation. At the isolated spots we note the penetration of the leucocytes, while the contiguous epithelial cells are almost free from their penetration.

"I am unable to say whether if left to itself, this epithelial proliferation would continue its infiltrating tendencies so as to get beyond the immediate vicinity of the surface or not. We have here an instance where our ignorance of what constitutes the dynamics of malignancy, and where our inability to rely upon structural changes as an expression of it, renders prognosis from a histological standpoint impossible. From the clinical history and from the examination of the patient, in spite of the uncertainty of the histological evidence I believe the prognosis good.

"(Signed) JONATHAN WRIGHT."

Later: "What makes this growth of especial interest to me is the bearing it has upon the etiology of the histogenesis of epithelioma and the question of malignancy in general. As we look along the surface of the epithelium, of that part of it not covering the proliferation in the stroma, but along that portion covering what is the usual structure of an edematous polyp, we note not one focus, but several foci from which budding groups of cells are appearing of the nature of the proliferation at the more anterior portions of the growth. These apparently are isolated, as heretofore noted. Now, if we have here a typical malignant growth, or indeed if it is clinically benign, we have its inception not from one focus, when we might venture the hypothesis that it was in reality from the nucleus of one cell gone wrong by mutation, but from a number of such cells. It is, of course, not impossible of conception that if sections in all directions fell through such a localized group of budding cells, their connection with a central mother group and thereby



with a single mutating nucleus might be revealed. Over the surface of a globular tumor might be traced in other words a continental map with extreme projections of capes from the main land, but so far as I can judge, this does not seem to be the case.

"If it is not the case, to explain this instance on my assumption of a mutation of a nucleus or of a cell-body I must suppose that the local environment of the polyp supplies a form of stimulus which starts the mutation in a number of nuclei in the same direction—and why not? Diminishing in frequency as we retreat from the exposed anterior end of the growth, we may well believe the stimulus to a so-called benign or to a so-called malignant hyperplasia may be derived from environmental influences more prevalent at a point where the columnar epithelium is more exposed to the air,—lower temperature, less moisture, dust, etc."

The patient returned to Russia,—not having reported again to the hospital.

**Extensive Mucocoele of the Ethmoids and Frontal Sinus. (Post-Operative). Report of Case.** By W. W. CARTER, M. D.

Mr. Chairman and Gentlemen: This man, 41 years of age, applied for treatment at the Manhattan Eye, Ear and Throat Hospital in March. He complained of severe frontal headache, frequent attacks of dizziness, of tears running down his cheeks, and the development of a swelling on his nose. These symptoms began about a year ago. He has noticed no disturbance in vision. He denies specific history.

On the left side of his nose at the inner margin of the orbit, there was a fluctuating tumor about the size of a hazel-nut, and a similar but somewhat smaller one on the opposite side in a corresponding position. (This cast made by me at the time shows very clearly the condition.) These tumors were very tense, and fluctuation could be felt from one side to the other, the connection between the two passing beneath the bony bridge formed by the nasal bones. On deep pressure a deficiency in the bone about the size of a dime could be felt on the left side, and a somewhat smaller opening on the right side.

With a sterilized syringe a small amount of a very tenacious viscid, brownish-colored fluid was withdrawn and the diagnosis of mucocoele of the ethmoids made. Culture made from this fluid showed it to be sterile. About ten days later another portion was withdrawn and a culture made. This contained a few bacteria. Dr. Wright, who made the examination, concluded that infection of the material had occurred from the wound previously made by the

aspirating needle. He considered this evidence that the nasal secretion was not bactericidal.

The X-ray photographs of the case were made by Dr. Caldwell. They show great absorption of bone in the ethmoidal labyrinth, a very large right frontal sinus, which communicates with a rudimentary left frontal sinus—the septum between the two being absorbed. It also shows a deficiency in the orbital plate on the left side. The intra-nasal examination showed a bulging downward of the roof of the nose, closing up completely the olfactory fissure.

The following operation was done on April 5: A curvilinear incision was made from the middle of the left eyebrow inward along the margin of the orbit over the larger of the two tumors. Through the opening in the bone at this point, I removed about two ounces of viscid, brownish mucus. With the finger and probe I found that the whole of the ethmoidal labyrinth had been absorbed back to the sphenoid, but not involving this sinus. This large cavity formed by such extensive absorption of bone, communicated by an opening the size of a lead pencil with the large right frontal sinus, which was connected with the rudimentary left frontal sinus. All of these cavities were filled with brownish mucus. There being no connection between the mucocele and the nose, I made a large opening into the middle fossa on the right side and introduced a gauze drain. The external opening was closed with horse-hair sutures. The patient made an uneventful recovery and has been relieved of all unpleasant symptoms.

Mucocele of a sinus may be described as being the distension of one or more of the walls of the cavity, and the accumulation in it of a mucous secretion resulting from obstruction of its outlet. The sinuses that may be affected are the frontal, ethmoidal (usually the anterior including the air-space in the middle turbinate) and the maxillary sinus. In a large proportion of cases the ethmoid cells are involved. There is no case on record of mucocele of the sphenoid.

Interesting features in this case are: 1. The extensive destruction of the ethmoid bone; both lateral masses and the vertical plate having been absorbed. 2. The involvement of the frontal sinuses. 3. The fortuitous and unusual circumstance that the point of least resistance to pressure proved to be at the suture between the lacrimal bone and the nasal process of the superior maxilla, where no structure of functional or vital importance was involved. 4. It is also of interest to note that in this case we were able to demonstrate that the nasal secretion was non-bactericidal.

## DISCUSSION.

DR. COFFIN said that he should like to correct one statement made by Dr. Carter, namely, that there was no similar case on record of mucocele within the sphenoid. Within the last week he had read of such a case. The day before, while doing a radical Killian operation, he removed what he considered at the time to be a mucocele from the sphenoid. The growth had been sent to the laboratory for examination, and will be reported later. One case, however, has been published recently.

DR. WILSON said that he failed to see how Dr. Carter had demonstrated that the nasal secretion was not bactericidal. It was not a normal secretion, and upon the evidence presented it was not fair to say it was not bactericidal.

DR. CARTER said that he was grateful to Dr. Coffin for calling his attention to the case of mucocele of the sphenoid which had been reported. He had carefully examined the literature at the Academy of Medicine, and had read an article published by Dr. Logan Turner two or three years ago, in which he stated that he had never seen a case of mucocele of the sphenoid and that he had been unable to find a report of such a case in the literature. The reported case to which Dr. Coffin called attention is certainly unique.

In regard to the nasal secretion being non-bactericidal—he had quoted Dr. Wright as making the statement: "I regard that as more evidence that the nasal secretion is not bactericidal." He himself agreed with Dr. Wilson that the secretion was not a normal one. It had been pent up in the cavity for a long time, and could not be of the same chemical character as the normal secretion. It seemed to him very remarkable that the mucocele should affect the whole ethmoid, should cause absorption of the vertical plate, and should push the mucous membrane before it without discharging into the nose.

**Nasal Hemorrhage Due to High Blood-Pressure.** By GERHARD H. COCKS, M. D.

This patient is 56 years old, and a brick-layer by occupation. He came to Dr. Chappell's clinic at the Manhattan Eye, Ear and Throat Hospital, in February, complaining of profuse bleeding from the nose at frequent intervals for a period of one week. He said that the amount of blood lost was very large, a statement borne out by the extreme pallor of his nasal and buccal mucous membranes. It literally gushed from his nose for several minutes, two or three times a day. Careful and repeated examinations of the nose and naso-pharynx failed to reveal any abrasion.

The blood-pressure, taken on February 18, one week after the initial hemorrhage, registered 235 mm. mercury by the Janeway sphygmomanometer. The left ventricle of the heart is apparently slightly hypertrophied, and the aortic second sound accentuated. The vessel-walls of the radial and temporal arteries show but little sclerosis. The urine has a specific gravity of from 1018 to 1024, with occasionally a trace of albumen, and sometimes a few hyaline and granula casts. In one instance, a small amount of sugar was found. His general health has been good, his only symptoms being slightly increased micturition at night.

Treatment was at once instituted to reduce the blood-pressure, as follows: 1. Milk diet. 2. Sodium nitrite, one-half gr. every four hours. 3. One-half ounce epsom salts every morning. 4. A nasal astringent consisting of tannic acid, 10 gr. to one ounce oleo-stearate of zine, applied locally. Since treatment was started, he has had no more bleeding.

RECORD OF BLOOD-PRESSURE: February 18, 1910, tension, 235; March 3, tension 210. Was tested at 3 p. m. and had taken medicine but once, at 8 a. m. March 7, tension 180; April 18, tension 175. On March 7, all medication was discontinued and the patient placed upon an ordinary diet, with meat but once a day.

DR. SIMPSON said that Dr. Cocks had advanced an excellent theory, but there was a possibility that it was a mere coincidence, and he should like to know from what part of the nose the hemorrhage came—whether from the whole inner surface of the nose or from some select spot. Then, too, if due to high blood-pressure, why did not the hemorrhage show in some other portion of the body? Again, the treatment by tannic acid, which is a strong astringent, might have been a factor in the control of the hemorrhage. He questioned whether the premises were entirely sustained.

DR. MACKENTY said he had seen several cases of epistaxis, both primary and post-operative, which were undoubtedly kept up by high blood-pressure. One patient upon whom he had done a sub-mucous operation bled at intervals for a week. Her blood-pressure was found to be 200. Immediately upon giving her the medication of which Dr. Cocks had spoken, the hemorrhage ceased. He called attention to the fact that high blood-pressure may be independent of arterio-sclerosis and unlike the latter, can be reduced by medication and diet. It may be independent of kidney conditions and arterio-sclerosis and produce a syndrome due entirely to the increased arterial tension.

DR. COCKS said that he could not answer Dr. Simpson's inquiry as to what part of the tract the hemorrhage came from, as he did not see the patient while the hemorrhage was going on and simply knew from the patient's statement that it came from the nose. The mucous membranes and lips were very much blanched, and it was evident that he had lost much blood. As far as the tannic acid was concerned, that drug was used first, but it was not until the patient was placed on nitrate of sodium that the hemorrhage finally ceased.

**Status Thymo-Lymphaticus and Its Relation to Sudden Death.**

By GERHARD H. COCKS, M. D.

*Published in full in THE LARYNGOSCOPE, July, 1910, p. 719.*

*(To be continued).*

**A Fatality Following the Removal of Tonsils and an Adenoid Growth.** FRANCIS R. PACKARD. *Am. Jour. of Med. Sci.*, Sept., 1910.

Patient, a girl, 3 years old, operated upon under ether, the anesthetization being started with ethyl chloride, total amount used, three ounces. One tonsil was removed by digital manipulation and dissection with scissors. The other was removed with a small guillotine, after having been freed from the surrounding tissue. The adenoid was removed with a forceps. Very little blood was lost, either at the operation or afterwards. The child came out of the ether within a very short time. The pulse was good, skin felt dry and warm and temperature was practically normal. The operation was performed at 1 p. m. At 4:30 in the afternoon the resident examined her throat. He said there was no bleeding and that she was in good condition. An hour later her condition became bad, pulse high, respiration irregular, temperature arising to 100°. The child died very shortly. A tracheotomy was performed, salt solution injected into the veins and stimulants freely administered hypodermically. There was no blood in the stomach or lungs, nor any other evidence of hemorrhage. No occlusion of the trachea or larynx was found at the time the tracheotomy was performed.

The author feels that it was probably one of those cases of so-called status lymphaticus, although no autopsy was obtained and the definite cause of death ascertained.

A. A.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND  
OTOLOGICAL SOCIETY.

*Sixteenth Annual Meeting, Washington, D. C.,  
April 28, 29 and 30, 1910.*

JAMES F. McKERNON, CHAIRMAN.

*(Proceedings continued from page 1185).*

DISCUSSION OF DR. SONDERN'S PAPER.

DR. JAMES F. McKERNON had found eczema of the external auditory meatus in a number of cases of rheumatic or gouty diathesis, and where there is a slight discharge through a small perforation close to the tympanic ring, appearing only when the patient is lying down. The application of cleansing and stimulating solutions, such as bichlorid of mercury or a mild solution of formalin, will generally clear up the condition. Many of these eczematous conditions resulting from old perforations can be cleared up in the same way. Exostosis, whether of the external or deeper portions, is generally traceable to rheumatism, gout or syphilis. He has seen a number of cases in which no history was obtainable other than that of former syphilis. As a rule exstoses of the external auditory canal develop very slowly. In the treatment of occlusions of the canal, whether congenital, due to marked perichondritis, or to cicatrix following operations for the removal of foreign growths, his results had formerly been very unsatisfactory. He had much more favorable results since employing the very clever flap devised by Dr. Duel. The flap is taken from the roof of the canal, brought down and sutured in place, thus forming almost the entire circumference of the canal; a foreign body of some kind being placed in the opening to prevent contraction and to keep the flap in place until cicatrization takes place. At first a solid plug was employed, but he had later used a celluloid tube, which is worn by the patient for months, and had found it much more satisfactory. The differential diagnosis between furunculosis of the external auditory canal and mastoiditis can generally be made by bearing in mind four tests which elicit pain in furunculosis, viz., pressure of the tragus; pressure under the lobe exerted upward; passing the finger into the post-aural fold and pressing against the posterior canal wall; and taking the auricle between the thumb and fingers and moving it up and down or in any direction. In furunculosis of the canal there is sometimes just as large a swelling as is found



in mastoiditis, but the latter condition can be detected if pressure is exerted not on the structures of the canal, but on the mastoid. It should be remembered that there may be a concurrent involvement of the mastoid and furunculosis. In the treatment of epithelioma in and around the external auditory meatus he had during the past year employed carbonic acid snow in three cases. In one of these cases Dr. Sondern had made the diagnosis from sections. The primary growth almost entirely healed, but the patient died later of metastasia.

DR. F. C. ARD said that since opening a perfectly normal mastoid many years ago he had been very careful in his differential diagnosis between the mastoiditis and furunculosis of the external auditory canal. A case was recently referred to him that had been treated for ten days by a general practitioner for furunculosis. Three or four furuncles were found in the canal discharging quite freely, but the pain continued. The speaker watched the case very carefully, and when there was a rather sudden increase in the discharge of pus he decided to open the mastoid. Upon doing so a very extensive destruction of the mastoid bone was found. This would indicate that cases of furunculosis should be watched with great care.

DR. ROBERT LEVY called attention to the frequent occurrence of otitis externa diffusa, in which there is a small amount of discharge, in cases associated with middle-ear tuberculosis. In these cases mastoiditis may occur in connection with diffuse external inflammation. One finds here a diffuse swelling without circumscribed formation of pus. Ichthyol with glycerine, applied on a small tampon, reduces this swelling in the external canal rapidly. The tuberculous otitis may then be treated with solutions of formalin (1-500 or 1-1000) with much benefit. Recurrent attacks are not infrequently seen.

DR. NORVAL H. PIERCE called attention to the fact that the most important point in the differential diagnosis between mastoiditis and furunculosis is that in furunculosis the swelling back of the ear is *edema*, whereas in mastoiditis it is *infiltration*. Edema is rarely if ever found in mastoiditis, perhaps occasionally in very young infants, and infiltration is never seen in furunculosis. If infiltration occurs back of the ear in furunculosis of the external auditory canal than there is either a periostitis due to the infection of the external auditory canal or a co-incident involvement of the interior of the mastoid process.



DR. EDWARD D. DENCH asked the reader of the paper if he had ever seen a case of keratosis obturans without perforation of the membrana tympani. In his own experience, perforation had always been present, and he had considered these cases of keratosis obturans as invariably indicating a cholesteatomatous deposit within the middle-ear.

Regarding the differential diagnosis between a formula in the external auditory meatus and a mastoiditis, this differential diagnosis could be made in 99 cases out of a hundred without difficulty. In the one hundredth case, most men would probably do as Dr. Ard did, and open a healthy mastoid.

In the treatment of epithelioma of the external auditory canal, he had had excellent recoveries before the discovery of the X-ray treatment, by complete excision of the neoplasm and the removal of the cervical glands.

In discussing the methods for enlarging the external auditory meatus, where narrowing had occurred as the result of traumatism, or from other causes, he cites the case of a man who had been thrown from an automobile. In this patient, the entrance of the meatus had been so narrowed as only to admit the introduction of a very fine probe. As a result of the fall the inferior wall of the external auditory canal had been fractured so that the bony meatus was narrowed as well. The treatment consisted in making an incision behind the ear, turning the auricle forward, dissecting out the cartilaginous meatus and exposing fully the bony meatus. The bony meatus was then enlarged by means of a gouge, the bone being removed from the inferior and posterior aspects of the bony canal until this channel was restored to practically its normal calibre. A tongue-shaped flap was then cut from the fibro-cartilaginous meatus, a portion of the conchal tissue being included in this flap. The cartilage was removed from the flap and the cutaneous flap sutured upward and backward. A skin graft was applied to the raw cartilaginous edge and the posterior incision was closed without drainage; the auricle being replaced in its normal position. The result was most satisfactory, the patient recovering with a perfectly patent external auditory meatus and perfect hearing.

DR. HARRY L. MYERS mentioned two cases which had recently come under his care, in which the thickening of the auricle, so frequent in eczema of the external ear, was extreme; the auricle being nearly twice its original size. These cases cleared up and became normal remarkably rapidly under the daily swabbing of

the involved area with peroxide of hydrogen, followed by absolute alcohol, and painting the surface with a two per cent solution of nitrate of silver. In addition to this treatment the patient was instructed to fill the ear twice daily with a five per cent solution of resorein in equal parts of alcohol and water. The dry scaly form had been greatly relieved by a two per cent salicylic ointment.

DR. HERBERT E. SMYTH said the carbonic acid snow is rendered much colder if dipped into ether before using, as is the practice with the Doctors Mayo.

DR. SHEPPARD, in closing the discussion, referring to the cases mentioned by Dr. McKernon, said he had seen cases treated for months for eczema which were in reality cases of chronic middle-ear suppuration. He had usually found exostoses in gouty or syphilitic subjects, and had generally considered these diseases as etiologic factors. A clear distinction should be drawn between hereditary and acquired occlusion of the canal. The acquired can often be corrected, but the hereditary kind are hard to rectify. Referring to the discussion concerning the differential diagnosis between furunculosis and mastoiditis, the Speaker called attention to the fact that his remarks dealt with the periostitis caused by mastoiditis and by boils. However, the mistake of opening the mastoid when furunculosis is the cause of the trouble is a mistake that may be easily made. He had seen a number of cases of keratosis obturans in which the tympanic membrane was perfectly normal. He had also seen cases in which the canal wall had undergone absorption owing to the pressure of these masses. He did not know the etiology, but had called the condition *otitis externa exfoliativa*.

**Results of Vaccine Therapy in Chronic Suppurative Otitis.** By

E. W. NAGLE, M. D.

This paper was the report of the treatment by this method of 40 cases taken from the clinic of Dr. E. R. Newton, at the Boston Dispensary, from cases referred to Dr. F. C. Cobb's clinic at the same institution, from the Massachusetts General Hospital Out-Patient Department, and from private practice.

The pus employed in making the vaccines was forced out into the aural canal from the Eustachian tube by catheterizing; the canal having previously been cleansed. This discharge was smeared over the surface of the culture tubes and these tubes were then incubated at the temperature of 37°C. until the growth had nearly reached its height. The time of incubation varied according to the

rapidity of the growth of the bacteria. When the height of the growth was reached, it was washed down into the bottom of the tube, off the surface of the media, with normal saline solution under sterile conditions and collected together in one tube. The tube was then sealed with the blow-pipe and subjected to the lowest temperature for the shortest period that was possible to kill the organisms. The vaccine was then tested to see if it was sterile. In staphylococcus vaccine 600,000,000 bacteria were put into every cubic centimeter of the vaccine, while vaccine made from other organisms contained only 100,000,000 bacteria to the cubic centimeter. The vaccine was sealed in sterile bottles holding fifty cubic centimeters. It is quite essential to have an active vaccine. The activity depends on getting a virulent type of bacteria, on killing them at the right time, before they begin to lose their characteristics, and on subjecting them to the lowest degree of heat for the shortest possible time necessary to kill the bacteria. The injections were always given in the arm, alternating left and right, just above the elbow close to the skin. The best results were obtained by giving the injections at intervals of three days and insisting that the patients should not miss a treatment. The beginning dose was usually a small one, a quarter of a cubic centimeter, 150,000,000 bacteria in the case of staphylococcus vaccine, increasing to a half, two-thirds, and then to a full cubic centimeter, continuing with this dose. Sometimes the dose was increased to two cubic centimeters before there was improvement. The opsonic index was not taken in any of the cases, dependence being placed entirely upon clinical symptoms. She had never had any complications or ill effects. After the first and sometimes after the second dose of vaccine, the patients complained of malaise, of a slight headache, and a few times of nausea, with a feeling of depression. This was followed in about twelve hours by a sense of exhilaration, lasting about two and a half days, and this was followed by depression. The injection was timed so as to come as the sense of exhilaration is wearing off and the depression was appearing. Six injections were usually given after the ear was dry.

Of the forty cases treated, in six the discharge had been present several months, but they had resisted all the usual methods of treatment. In the other thirty-four cases, the ears had been discharging from one to forty years. In only one case did the vaccine fail to cure the discharge, the cause of failure being unknown. Some of the cases were treated as long ago as a year and nine months. The bacteria found in the discharge from the ears were

staphylococci, a coccus in pairs, a bacillus of the proteus type, an influenza-like bacillus, and a number of other kinds of bacteria which were not classified. Some of the cases were of mixed infection.

#### DISCUSSION.

DR. FREDERICK E. SONDERN thought Dr. Nagle very wise in the rules laid down concerning the making of autogenous vaccines and agreed with her that these may be harmed by prolonged exposure to unnecessary high temperature. It has been interesting to note that a vaccine made by one person may not prove as efficacious as that made by another and the method of sterilizing may explain this. It is also well not to keep the cultures too long, and fresh ones should be prepared every few weeks if the treatment is continued that long. The type of organism has a good deal to do with the outcome of vaccine therapy. It is to be regretted that the opsonic index-determination has been found inconstant and not practical by expert workers; for it would help solve the problems of size and frequency of administration. The successful application of vaccine therapy depends in a great measure upon the acuteness of the user in determining not only the dose but particularly the time when the next injection should be given, as in any other therapeutic measure which must vary not only in different patients, but also in different types of infection. Dr. Nagle's minute description of the clinical picture noted in the cases during treatment is an indication of the careful observation that is necessary and doubtless explains in a great measure the successful results obtained. It would seem reasonable to explain the coming away of sequestra during vaccine treatment by the fact that the surrounding inflammatory lesion subsides and thus allows the dead bone to drop out. Instances have been reported in which vaccine therapy has given good results in cases of acute systemic infection. The present theory on which this form of treatment is based would indicate its usefulness is chronic lesions only, and if it is found useful in acute systemic infections a change in the theory will be necessary.

DR. B. R. SHURLEY had found vaccine therapy of very little help in his work in the accessory sinuses, and in pyocyanus infection absolutely useless. Its chief field of usefulness is in staphylococcus infection. The poly-valent vaccine, where fifteen to seventeen selected strains are used, is one of the most effective of the stock vaccines. In many cases of staphylococcus infection

the stock vaccine is useful. It can be employed in cases where operative interference is declined. Accuracy in dosage should be emphasized. He had witnessed a case in which six times the proper dose was given and in which, in a few minutes, there was tremendous shock, almost causing death.

DR. EDGAR M. HOLMES had tried the vaccine method at the City Hospital, both the stock and the autogenous vaccine being used, but without very satisfactory results. The injections were made one a week as a rule, sometimes more frequently. One reason, perhaps, why the vaccines are effective in the ear and not in the nose and sinuses, is because the ear offers very little space for absorption, whereas in the other region there is so much absorption that it requires a tremendous dose to be effective at all. He asked if it would be justifiable, after the report presented, in cases of known necrosis, in polyps, and in mastoid complications, where there was a previous discharge, to wait, and if to wait, how long should the vaccine be used before resorting to other measures.

DR. EWING W. DAY had used the streptococcic vaccine in acute cases in six instances, with very gratifying results. The first patient was himself, the condition for which the vaccine was used being a streptococcic infection arising from a small pimple on the finger and extending up the arm to the glands in the axilla. His temperature, which was  $101\frac{1}{2}^{\circ}$  in the morning, rose to  $103^{\circ}$  by 7 p. m. A vaccine taken from a patient in the hospital who was suffering from streptococcic infection was employed, 100,000,000 being injected that night, Wednesday. On Friday night 100,000,000 more was injected, and on Monday he was back in his office. A week later he had under observation a patient who presented all the symptoms of an acute mastoiditis. A lumbar puncture was made and streptococci were found in the cerebro-spinal fluid. The polymorphonuclear count was ninety-five per cent. The vaccine made from the Speaker's finger was used, but the first dose gave no particular improvement. The patient's friends, having heard of the vaccine, insisted that something more be done, and another lumbar puncture was made and the anti-streptococcic serum injected into the spinal canal. The second dose of vaccine from the Speaker's pus was used, and on the following day the anti-streptococcic serum was employed. After that the vaccine was used every second day. The case showed a slow and steady decline from 960 at the height, to 700, 500, 200, and finally, when the last count was made, 60, the patient then being pretty well recovered. Recovery was slow, extending over three or four weeks. The next case was given mixed treatment of sub-dural

drainage and vaccine; the vaccine being taken from the cerebro-spinal fluid. This patient recovered in about three weeks. The fourth case, also one of acute mastoiditis, is now under treatment in the hospital. At the time he was operated upon he had an acute sup-puration on the finger and also sinus thrombosis. A blood culture was made at intervals of from two to five days. The temperature has varied from normal to  $99.2^{\circ}$ , and the physical and mental condition is clearing up.

DR. HALSTEAD S. HEDGES mentioned a case of serous meningitis, with exposure of the meninges, in which the staphylococcus vaccine had been used during the acute stage, with steady improvement in the patient's condition. Extensive exposure of the meninges was made ten days after the primary mastoid operation.

DR. KITTRIDGE cited a case in which he had performed a sub-mucous operation for deflected septum; at the same time amputating the anterior portion of the middle turbinate on the side opposite the deflection. The case showed some evidence of sepsis on the third day following operation. Upon the fourth day the patient insisted on returning to his home, which was at a distance, even though his temperature was  $102^{\circ}$ . The physician, under whose care he was, reported that upon the sixth or seventh day his temperature varied from  $103^{\circ}$  to  $105.5^{\circ}$ , pulse from 130 to 150, and there was a bad-smelling discharge from the side of the nose from which a portion of the turbinate had been removed. He had administered some of the stock vaccine for staphylococci with no apparent relief. Following this he sent some of the pus to Harvard Medical School, from which an autogenous serum was made, and upon the eighth or ninth day this was administered. There shortly followed a fall of temperature and an improvement in the general condition of the patient, who, in the meantime had been a desperately sick man. A few injections were used. The physician in charge failed to report the number of injections, also the nature of the germ. The patient finally recovered.

DR. JOHN H. ALLEN cited a case of sinus thrombosis, with the development in a few days of a metastatic abscess of the buttocks. The sinus was opened and a soft clot evacuated, from which a diplococcus was grown, while from the buttocks abscess a streptococcus was taken. From the two organisms an autogenous vaccine was made and employed, and the patient recovered quite promptly; whether as a result of the operation or of the use of the vaccine is a question. It would seem that in order to form an intelligent opinion

of the value of the use of vaccines in chronic suppuration of the middle-ears, one should know the exact conditions of the ears treated. It is, of course, of material difference whether there is simply swelling of the mucous membrane or a tubal catarrh, or whether there is an attic suppuration, with caries or cholesteatoma.

DR. FREDERICK C. COBB was not sure whether the results were permanent, nor is it claimed by Dr. Nagle that they will be so. Recurrence in the ear may possibly take place later. He mentioned particularly one case, a patient of Dr. Thorndyke, who had discharge enough to drench the pillow at night. There was so large a swelling of the glands, that Dr. Thorndyke thought he would have to operate. This all disappeared in a few weeks under treatment with the vaccine. Whether the cure is to be permanent or not, the method is of great importance and should certainly be tried. By way of contrast with the results obtained by the vaccine treatment in suppurative otitis media, the speaker mentioned a series of experiments, extending over eight months, first at the Massachusetts General Hospital and then at the Dispensary, with the vaccine in a series of cases of sinusitis and atrophic rhinitis. These vaccines were also prepared by Dr. Nagle. The treatment did not stop the pus, and while the patients were improved, it is not claimed that they are well. The ear cases for some reason, did better than the nose cases, probably because it is much easier to obtain from the former a pure culture, while it is difficult to sterilize the latter, owing to the millions of bacteria on the hairs in the nose.

DR. NAGLE, in closing the discussion, said most of her patients had gained in weight, while others had neither gained nor lost. The stock vaccines in her hands had not given satisfactory results. She had failed in some way to obtain good results in nose cases, possibly in the making of the vaccine, possibly from the change in form of the bacteria. She had not made a vaccine in pyocyanous cases, having considered these as secondary infections. Referring to the matter of surgical shock following too large doses and too great an interval between injections, a case was cited which she had observed under treatment in London. The injections were given ten days apart, and all of the injections were followed by marked shock and illness. Much of the success of the method depends upon how the vaccines are made, how the bacteria are killed, the length of time, etc., and upon having an active vaccine. The method had not been tried by her in acute cases. She had had only one case in which there was a discharge from the attic. The patient did well



under the vaccine treatment for a time, then moved away, the subsequent history being unknown. During the vaccine treatment none of the cases had received any other treatment than cleansing measures.

#### SYMPOSIUM—THE DEAF CHILD.

##### **The Deaf Child from the Viewpoint of the Physician and Teacher.**

By JAMES KERR LOVE, M. D.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 661.*

##### **The Physiology and Psychology of Hearing with Special Reference to the Development of Speech.**

By G. HUDSON-MAKUEN, M. D.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 653.*

##### **Clinical Aspects of Deaf-Mutism.**

By F. R. PACKARD, M. D.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 642.*

##### **What the Physician May Do for the Deaf Child.**

By M. A. GOLDSTEIN, M. D.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 636.*

##### **Development of Hearing.**

By MRS. J. SCOTT ANDERSON.

*Abstracted in the October, 1910, issue of THE LARYNGOSCOPE, p. 1009.*

##### **The Mental Development of the Deaf Child.**

By E. M. GAL-

LAUDET, M. D.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 596.*

##### **The Development of Speech in the Deaf Child.**

By A. L. E.

CROUTER, M. D.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 612.*

##### **Development of Language in the Deaf Child.**

By J. W. JONES,

M. D.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 618.*

##### **The Development of Speech-Reading in the Deaf Child.**

By MISS

M. McCOWEN.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 624.*

#### DISCUSSION.

DR. ALEXANDER GRAHAM BELL expressed his pleasure at being present at this unique gathering of otologists and others particularly interested in preventing or curing deafness by medical or surgical means, and of teachers of little deaf children who are interested in the amelioration of their condition by education. He had been an otologist and teacher of the deaf for many years, and a member of the American Otological Society for thirty years, and this was the first time he had known the two professions to come together in such a meeting. To the teachers of the deaf he had nothing new to say, but to otologists he made a strong plea for co-operation and assist-

ance. Many cases suffering from progressive catarrhal deafness, who cannot be benefited by medical or surgical measures, can be advised by the otologist, to whom they apply for help, to learn to read speech from the lips. Many such persons, the victims of acquired deafness, are useful members of society, suffering very little restriction on account of their deafness. By recommending to many of these individuals the study of speech-reading, the otologist can bring happiness and hope to many homes where now there is only despair. In the case of children born deaf, or those becoming deaf in early life from scarlet fever or other causes, though the otologist can do nothing to relieve the condition, or to prevent the little ones from becoming dumb from lack of conversation with others, he can and should advise the parents of such children concerning their education. The speaker here briefly alluded to the progress which had been made in America in the education of deaf children since the founding of the first school in this country at Hartford, Conn., in 1817, by Dr. Thomas Hopkins Gallaudet. The sign language of the Abbé de l'Epée became the conventional language of the deaf, while its use spread all over the country, becoming at one time universal. In process of time it came to be agreed that it is not advisable for deaf children to use a language that is not understood by the people around them, and so the sign language is little employed to-day, the verdict being that it must give way to a language which all understand. And so, as English is the language of other schools, it has come to be the language of the deaf in English-speaking countries, whether it is spelled upon the fingers, written, or spoken. As the development of the education of the deaf progressed, teachers were unwilling to confine their pupils to communication with their fellows by means of the sign language, nor yet by means of pencil and pad, and so it has come about that the deaf child, who is also dumb because he cannot hear, can be taught to speak. It is not claimed that elocutionists can be made of them, but they can be taught to speak so that their family and friends understand them. Some few speak well, but the majority speak so they can be understood. A great movement has sprung up in this country, fostered by the American Association for the Promotion of the Teaching of the Deaf, which has its home in Washington, D. C., where the Volta Bureau furnishes all literature and other information concerning the deaf. Over seventy per cent of deaf children in America are now taught by the speech method, while there is a steady decrease in the number being taught by the use of the sign language. The speaker here presented

and briefly explained a system of symbols devised by his father, Dr. Melville Bell, which are used in teaching the deaf. The different figures represent the various positions of the vocal organs in speech. This method of symbolizing the action of speech has proved of great assistance, both in teaching deaf children to speak and in familiarizing the teachers of the deaf with the mechanism of speech.

MISS MARY S. GARRETT thought the duty regarding the subjects of the papers which had been read is to observe the natural powers of the little deaf child from the time deafness is discovered, and to aid in their development according to their possibilities rather than their supposed limitations. The fact that a child can cry or babble signifies that it has a voice which, like other parts of the body, can be developed. With the deaf child as with the hearing child, learning to talk is a matter of repetition, and it should be the duty of parents and teachers to give to the deaf child such repetition, through the eye, as the hearing child receives it through the ear. No age-limit can be fixed for sending the deaf child to school,—the school age begins when the child has acquired the knowledge of articulate speech, language and speech-reading. The chief aim should be to eliminate deafness by eliminating the three main causes, viz., intermarriage of near relatives, diseases which produce deafness, and the massing together of deaf persons during adolescence and early adult life for purposes of education, thus fostering intermarriage among them.

PROF. JOHN DUTTON WRIGHT expressed the hope that this joint meeting would result in some permanent benefit to the deaf child, and that the Society would adopt a motion with this purpose in view. He suggested that medical schools should send out graduates who are prepared to meet the problem of the deaf child. At the present time, medical colleges give practically no instruction concerning what can be done for a deaf child educationally, where it can be done and when the work should be begun. He suggested that a practical means of aiding the work of educating the deaf would be, for the Society to appoint a committee\* whose duty it should be to endeavor to have the graduating class in each medical school in the United States and Canada instructed by the Professor of Otology, or by some competent educator of the deaf, on the means available for ameliorating the condition of the deaf by education. Then an increasing body of young men would go out into the world prepared to guide the parents of deaf children in arranging for their education.

\*Such a committee as was suggested by Prof. Wright was appointed by the Chair at a later executive session.

Referring to the age at which a child becoming deaf may become dumb also, though having spoken like any other child up to the time hearing was lost, the speaker cited the case of a little girl who became deaf at the age of  $6\frac{1}{2}$  years, and who, one and a half years later, spoke so imperfectly that even her mother could only partially understand her and strangers not at all, despite the fact that she had acquired a good vocabulary for her years before she lost her hearing, and is exceptionally intelligent. She has recovered ninety-five per cent of her speech since entering a school for the deaf, but it has taken nearly a year of hard work to accomplish this. The deterioration in speech might have been avoided and she would almost unconsciously have learned to read the lips had prompt measures been taken. He urged upon physicians the great desirability of seeing that the child is placed under the guidance of a trained teacher the moment hearing is seriously impaired, even while the physical condition still requires medical treatment, in order that there may be no deterioration in speech and that lip-reading may so immediately replace hearing that the transition is rendered much easier. Even a short time each day devoted to this purpose, and the direction of the home life to this end will save many months of difficult labor, and promptness in beginning the work is essential to the best results.

Some standard of measurement of hearing should be adopted by that class of children who are too deaf to go to the ordinary schools, in order that the results of auricular training with them may be satisfactorily interpreted, and that it may be determined how much of the improved use of the remaining hearing is due to actual change in the power of sound-perception in the organ of hearing, and how much is due to the mental development increasing the ability to associate ideas with the imperfect sounds heard.

Dr. Goldstein had spoken of the large number of children in this country who are struggling along in the public schools, classed as dull or stupid, when they are not really so, but simply cannot get what they need from the public school system, with its necessarily large class units. In the city of New York there are 600,000 public school children, of whom the Department of Child Hygiene, under Dr. S. J. Baker, has now examined 477,500 and has found between four and five thousand whose hearing is sufficiently defective to be noted in the more or less superficial examination which is given them. At the present time there is no adequate provision for giving these children what they need in the public schools. They are in no sense candidates for a school for

the deaf. It is hoped that arrangements can soon be made to give them their public school education in small enough groups to insure the necessarily individual attention.

While the speech of the totally deaf child is not always intelligible to strangers and not always very good, it can be made of sufficiently good quality to remove the child from the category of the deaf-mute. The sense of touch and the muscular sense, upon which dependence must be principally placed, are not sufficiently delicate to recognize the swiftly recurring and almost infinite variety of modulation which enters into normal speech. Even the sense of touch of Helen Keller, whom he had the pleasure of teaching, keen as it is, is not capable of giving her the finer modulations. The multiplicity of inflections of which each word is capable, accounts for the fact that the speech of the deaf differs so from that of the normal individual.

DR. GEORGE L. RICHARDS had been especially interested in that phase of the subject which deals with the time when the teaching of the deaf child should begin. In the manufacturing district in which he lives there are many absolutely deaf children, many of whose mothers bring the children to him to know if they are really deaf. It is not always an easy matter to tell whether a child two or three years of age is deaf, but suppose it is what is to be done with it? The child must be six or seven years of age before it may be sent away from home. In the meantime it should be the duty of the otologist who is consulted in a given case to teach the mother or others who care for the deaf child to develop its power of speech as much as possible.

DR. J. L. KENT, referring to what has been called congenital deafness, cited two cases which had recently come under his observation. One case was that of a young man, of perfect physical make-up and attractive appearance, who asked if anything could be done for his deafness. In eliciting the family history it was learned that his father and mother were educated in a co-educational institution for the deaf and dumb, to which they were sent as children, that they were married shortly after leaving the school, and that their offspring consists of eight deaf and dumb children, not one of whom can hear anything or make more than an ordinary animal sound. The young man, upon careful examination, presented no visible anatomical anomaly about his hearing apparatus. But for a slight thickening of the drum membranes it would not have been suspected from physical examination that

he was deaf. He had no adenoids, nor signs of previous adenoids. All of the children are perfectly healthy. The other case is that of a man who became deaf after he was 16 or 18 years of age. He married a perfectly normal woman who had never had any trouble with her ears. Of their four children, one became deaf from atrophy of the auditory nerve, just as the father had; the second was becoming deaf when he died; the third is perfectly deaf, and the fourth is the only one with perfect hearing. The sexes should be separated as much as possible and intermarriage of these afflicted people prevented where it is possible. There should at least be separate schools for them.

DR. G. HUDSON-MAKUEN emphasized the importance of trying to improve the voices of the deaf as well as the articulation, and he is convinced that this can be done to a greater degree than is generally supposed through the development of those particular kinesthetic areas of the brain in which are stored memories for the movements of the respiratory and phonatory muscles. He would teach a definite musculature of respiration in these cases, making it just as accurate and precise as the musculature of articulation, and he thinks that if this were done it would be possible to give to the deaf much more agreeable and effective voices; this removing one great objection to the oral method of teaching.

MRS. J. SCOTT ANDERSON said she had employed the term "lip-reading" merely because it is more generally used than the term "expression-reading." She called especial attention to the Volta Bureau, where information concerning the deaf throughout the world may be obtained free of charge. She believes the time will come when the legislature will be asked to give sufficient sums to state educationalists that they may establish separate homes or divisions for the mentally defective deaf child. With reference to the work among the mothers of deaf children, the speaker alluded to a paper which she will read before the Brussels Congress (III Congres International d'Education familiale), tracing simply, step by step, the development of the early education of the deaf child, and which will later be printed by the Volta Bureau for distribution among the mothers of deaf children.

MISS MARY McCOWEN said it was not until 1885 that the first school which advocated teaching young deaf children was established in the United States. The proper time for beginning the education of the deaf child was then considered to be the eighth or ninth year, and many schools still hold that view. The number

of schools in this country to-day where little children are welcomed can be numbered on the fingers of one hand, and indeed few state schools are equipped to provide for children of a tender age. But on the other hand, in how few homes does the mother know how to train the little deaf child in good habits and give him language, or knowing what to do, does she have the necessary time and strength to do it? Therefore much of this work which is necessary for the best development of the deaf child must still go undone unless provided for outside the child's home.

Concerning the question of present attainments among the deaf, it may be stated that when the work of teaching the deaf to speak was first begun little was expected because hitherto no high standards of excellence for the deaf along any line had been established. Steady progress has, however, been made and most schools are to-day doing many times better work in every way than was thought possible only a few years ago. While a great deal has been accomplished in the way of voice control, much remains to be done. But when it is borne in mind that many hearing persons strive in vain for some desired trick of speech, or for the correction of a lisp or slight defect of enunciation, and that voices once under perfect control, when suddenly deprived of hearing, the natural source of voice control, are prone to wander up and down like a vessel without a rudder, one should not too suddenly demand perfection of the deaf, but take courage from the fact that the voices of those who never heard do respond even though slowly to careful training.

**Foreign Body in Right Bronchus Removed by Lower Bronchoscopy.**

By DR. CHARLES W. RICHARDSON, WASHINGTON, D. C.

*Published in full in the June, 1910, issue of THE LARYNGOSCOPE, p. 633.*

DR. HARRIS P. MOSHER said he was pleased that it was his privilege to be the first speaker and so the first to congratulate Dr. Richardson on his unique and brilliant case. In some ways he was fortunate in the character of the foreign body with which he had had to deal. It was not sharp and pointed, so that it pierced the bronchus and became impacted, and it was not so brittle that it would crush like a peanut. If it had been a lead eraser instead of an ink eraser it would have been almost an ideal foreign body for removal.

The rubber was so large that Dr. Richardson had difficulty in making his forceps grasp it. In a recent article the speaker touched upon the importance of having the forceps exactly suited to the



foreign body. When the case will permit it he prefers to delay the attempt to extract a foreign body until a duplicate of it is obtained upon which the grasp of the forceps can be tested.

As a slight contribution to this discussion he wished to cite two cases from which he learned a good deal. Both were cases of direct laryngoscopy, not cases of bronchoscopy. In both of these cases there was a tumor springing from the anterior part of the vocal cord. The first patient was a young sailor of glorious physique. In his larynx there was a cystic growth which sprang from a pedicle which was placed just below the left vocal cord about two-thirds of the way forward. Under ether he had the greatest difficulty in seeing the growth. All the instruments known to him were tried, including the triangular fenestrated tube. The best that he was able to accomplish was to remove the larger part of the cyst. The pedicle could not be got. Later under cocaine various right-angled instruments were tried through the mouth under the guidance of the mirror. Other men beside himself tried in this manner, but the result of all their efforts amounted to practically nothing.

Soon after this a case was referred to him in which there was a small fibroma of the left cord. As in the first case the growth was situated well forward. It was easy to see it with the mirror, but the physician, a laryngologist of experience, was not able, after repeated trials, to grasp it. He felt sure, and the speaker shared the feeling, that under ether it would be a simple matter to remove the tumor. Under ether, however, the same difficulties were encountered as presented in the case of the young sailor. Instrument after instrument was tried and discarded, until, finally, he went back to a small bronchoscope about ten inches long and a quarter of an inch in diameter. With this he was able to get in behind the last tooth and to shoot diagonally across the larynx and pin the growth inside the tube. He had the tumor pinned, as it were, against the wall and could deal with it as he pleased. Shortly after this the same tube and the same manipulation were successful in removing the pedicle of the cystic tumor from the larynx of the sailor. With the sailor the procedure was more difficult, in fact, in the attempts to corner the pedicle the tube was considerably twisted. It would seem from these two cases that where there is a growth on the anterior part of the vocal cords the use of the small bronchoscope is suggested. With the small tube the growth can be seen when other instruments fail to disclose it, and with it the growth can be pinned firmly against the side of the larynx,

and when these two things have been accomplished the removal of the tumor with appropriate forceps is easy.

DR. JAMES F. McCAW cited a case in his practice in which he encountered the same difficulties mentioned by Dr. Mosher. The growth was a marginal fibroma of the right vocal cord situated near the anterior commissure. After three or four days' training of the larynx by the introduction of instruments several ineffectual attempts were made to remove the growth by indirect laryngoscopy; at each attempt to grasp the growth it would disappear below the vocal cord. This method was therefore abandoned, and an attempt was made to remove the growth by direct laryngoscopy with Jackson's split spatular. The same difficulties were encountered with this method, as with the indirect method, on account of the location and position of the tumor. With none of the instruments usually used in this procedure was he able to grasp the growth, and as a last resort he tried the long shank alligator forceps. By crowding the anterior blade well forward he was able to grasp the tumor finally and remove it. Tumors situated in this position of the larynx are undoubtedly among the most difficult to remove, and for that reason he was very glad to know of Dr. Mosher's method of pinning the growth down with the ordinary bronchoscopic tube. It seemed that this would very much facilitate the removal of such tumors in this locality.

DR. WALTER B. JOHNSON thought the interesting feature of Dr. Richardson's case was the size of the rubber eraser, which, carefully measured, would compare favorably with an O'Dwyer adult intubation tube. He had recently had under his care a child one year old who had inspired half a peanut. When the patient was brought into the hospital it was having great difficulty in breathing, and was very cyanotic. A vain attempt was made to locate the peanut by means of the X-ray, and, after having spent the greater part of the morning with the child, it was decided to introduce a one-year-old O'Dwyer foreign-body tube, inasmuch as the respiratory movements were becoming constantly more difficult and the child more cyanotic. The intention was, after luncheon, to perform upper bronchoscopy. On removal of the foreign body tube prior to using the bronchoscope the child was breathing easily, and had no further difficulty in either inspiratory or expiratory movements. The nurse reported that it had had a violent spell of coughing during the noon hour, and the presumption was that it had coughed up and swallowed the peanut. The presence of the peanut within the lung was demonstrated positively not only

by the symptoms but by the auscultatory examination. The presumption that it was coughed up was borne out by the absence of further symptoms.

DR. HARRY L. MYERS cited two cases, one of a grain of corn, the other of a peanut inspired into the trachea. Inspiration was free but at each expiration the foreign body in each case would be thrown up against the under side of the vocal cords, producing a spasmodic closure of the glottis, and greatly interfering with full respiration. The impact of the bodies against the under side of the cords could be heard from without with great distinctness. Tracheotomy was done in both cases and as soon as the trachea was opened expiration drove the foreign body out of the tracheal wound. I feel sure that had I then known of and used a laryngoscopy tube the body in each case would have been thrown into the tube and tracheotomy avoided.

DR. WENDELL C. PHILLIPS, apropos of the toleration of the bronchi for foreign bodies, mentioned a case in which a patient, brought to him by a dentist, had swallowed a small metal instrument which dentists call a wrench, and which is used for adjusting the dam. Despite the warnings of the dentist, the patient had inspired the instrument during a coughing spell. A very thorough examination with the laryngoscope and other methods, except the X-ray, failed to reveal the wrench, nor did the patient present any symptoms of having a foreign body in any part of his anatomy. It was decided that he must have swallowed it and that it was in his stomach. During the night he was awakened by a slight coughing spell, when he coughed up the wrench. In another instance an attempt was made to remove a papilloma from the vocal cord in a woman whose neck was so short and fat, and whose joints were so crippled with rheumatism, that it was impossible to get her in such position, despite the fact that she was profoundly anesthetized, as to be able to introduce the tube into the larynx without sacrificing two incisor teeth.

DR. A. A. M. MCKIMMIE emphasized the difficulties which Dr. Richardson experienced in attempting to remove the eraser. All forceps failed to grasp it, and if the plan suggested by Dr. Mosher had been followed he would still have failed. The eraser was not pure rubber, but a combination of rubber and some other substance, it was friable, and would break each time it was grasped. The speaker had suggested using a hook, but with this, too, the eraser would break. It was not merely lodged, but was firmly im-

pacted. The suggestion to remove it with a screw was excellent, and, as he thought at the time, was original with Dr. Richardson. He had learned, however, that Dr. Ingals had said, in a paper read before the Southern Section last year, that in some cases a screw might be used. This eraser was in the right bronchus, but it came up so far as to almost cover the left bronchial opening. A screw seemed to be the only instrument with which it could be removed.

DR. B. R. SHURLY cited three cases which had recently come under his observation. The first, a fibroma of the anterior commissure, was removed by a specially devised laryngeal snare, with a Jackson spatula, under cocain. The second was a papilloma, which was removed by a specially-devised forceps with the beak leading forward. The third case was a patient of Dr. Hickey, who presented herself with a diagnosis of pulmonary tuberculosis. She had coughed for three months. Upon inquiry it was found that she had had two teeth extracted under nitrous oxide two months previously, one of them evidently having been inspired, as the X-ray revealed a tooth well down in the bronchus. After considerable difficulty the tooth was removed by bronchoscopy.

DR. RICHARDSON, in closing the discussion, referring to Dr. Mosher's remarks, agreed that it is always well to be prepared for an emergency, but no grasping-forceps which he had ever seen were sufficiently wide to encompass the broad upper extremity of this eraser and hold it firmly enough to allow it to be removed. Each time that an attempt was made to remove the body little pieces of the mass were pulled away. The idea of the screw was not original with him; he had probably read the article to which Dr. McKimmie referred, and from it the idea of using the screw in this case resulted.

**Acute Nephritis Following Acute Tonsillitis.** By HANAU W. LOEB, M. D.

An experience with acute nephritis, following tonsillitis, during the winter of 1908-09, brought to the author's mind two important facts: That acute nephritis is a frequent sequella of tonsillitis; that this is overlooked by the great majority of practitioners. Pediatricians are perhaps more familiar with the association of nephritis and tonsillitis than are general practitioners and laryngologists. Four illustrative cases were cited. Of these four cases, two were those of physicians, one that of the daughter of a physician, and one that of the wife of a physician. There was no suspicion of the possibility of a nephritic condition until the disease was well advanced,

despite the greater care in observation supposed to apply in the case of physicians and their families. In each instance, diphtheria and scarlet fever were positively excluded; the nephritis was of the hemorrhagic non-scarlatinal type; and the tonsillar inflammation was mild in character and the course unusually slow. The nephritis was not discovered in any case until the tonsillar affection had disappeared. This differs materially from the nephritis of scarletina and diphtheria, in which the physical signs as well as the symptoms of the nephritis are concomitant with the height of the disease. In all cases, the nephritis would have been considered as spontaneous, or idiopathic, if the tonsil affection had not been so closely observed.

The literature of the subject, although exceedingly meager, considering the importance and gravity of the condition, bears out the author's own observation, particularly as to the course of the nephritis. Less attention has been paid to the character of the tonsillitis itself, which, after all, should be studied with the utmost care. This is mainly due to the fact that the subject has been far more widely studied by internists than by laryngologists. The tonsil as an atrium for the disease has been studied by a number of laryngologists, notably Goodale, Wood and Wright.

From the histories of the four cases and a review of the literature of the subject, the following conclusions are drawn: 1. Acute nephritis results from acute tonsillitis far more often than is generally believed. 2. The symptoms ordinarily are not manifested until some time after the inception of the disease. 3. The nephritis is of the hemorrhagic type and differs from that of scarlet fever in that pyrexia, edema, and oliguria are not marked symptoms of the disease. In addition, it follows the angina and is not concomitant as in scarlatina and diphtheria. 4. Judging from the course of the cases reported, there must be many in which a mild nephritis occurs incident to a tonsillitis, which goes on to resolution without patient or physician being conscious of its presence. 5. As each case of lacunar tonsillitis may be a potential source of acute nephritis, it is incumbent upon practitioners to observe the urine—not only during the height of the disease, but for some time after as well. 6. Spontaneous or idiopathic nephritis is probably often due to a tonsillitis that has not been considered as an etiologic possibility. 7. Chronic affections of the kidney may very well owe their origin to unrecognized attacks of nephritis of tonsillar origin. 8. Much light may be shed upon this subject by a study of urine in a large number of cases of acute tonsillitis.

## DISCUSSION.

DR. WENDELL C. PHILLIPS had not found in his own experience that acute nephritis follows acute tonsillitis in any considerable proportion of cases, though it is entirely probable that it would do so. He was inclined, however, to think Dr. Loeb had taken an extreme view of the importance of this complication. It is well known that ordinarily in the course of follicular tonsillitis one tonsil becomes the seat of the disease, the second morning the other is affected, the third morning the first is well, and by the fourth day all symptoms of the disease have subsided. The persistence of the symptoms in the first case cited by Dr. Loeb would suggest some other deep-seated trouble. In none of the cases cited does the history show that urinalysis was made before the attack of acute tonsillitis. In many instances there is no doubt a nephritis before the attack of tonsillitis. Urinalysis should be made in every case.

DR. J. A. STUCKY had long since come to the conclusion that tonsillitis is simply a local manifestation of some systemic condition. For years he had had charge of an orphan asylum and two or three boarding schools, and he had made about three thousand examinations of the urine in all sorts of nose and throat troubles. He has never seen a case of follicular tonsillitis in which Heller's test with cold nitric acid did not show the red line indicating faulty metabolism. In the past eight or ten years he has seen five cases of nephritis. He did not believe that nephritis is the result of the tonsillitis, nor did he believe that the local treatment is of as much importance as the systemic treatment. So convinced is he that tonsillitis is due to systemic infection that in all cases he gives a routine treatment—clean out the intestinal tract. For this purpose he gives one dose of calomel, five grains for children, ten to fifteen grains for adults, followed in six hours by an ounce of castor oil, and two hours later a saline, such as a bottle of citrate of magnesia. For the pain and ache benzoate of soda is almost a specific, given in ten grain doses every three hours. Locally nothing is equal to cleaning out the tonsillar crypts and rubbing in argyrol. He believed Dr. Loeb's case to be one of mixed infection, and that the nephritis was the result of the intestinal condition and not of infection through the tonsil.

DR. JAMES F. MCCAW said Dr. Loeb's paper suggests several similar cases in his own practice, the most severe one being that of a physician. This patient had a sub-acute follicular tonsillitis, not



severe enough to confine him to bed, and he continued to attend to his practice for about one week, when suddenly he seemed to be overwhelmed with sepsis, almost complete anuria, the small amount of urine which was passed containing about 50 per cent of albumin. Another case was that of a young boy about 14 years of age, upon whom he had done a mastoid operation. On his return home after ten days following the operation, he developed an attack of acute follicular tonsillitis followed by acute nephritis. The urine contained large quantities of albumin and casts for several weeks. It was not likely that this was ether nephritis following the operation, as an analysis immediately afterward showed no trace of albumin.

DR. NORTON L. WILSON said that in an experience of twenty years he had encountered one case such as Dr. Loeb had described. The lesson to be learned from these cases is that the urine is not examined often enough, either by the family physician or by the specialist. He did not agree with Dr. Stucky, but on the contrary considered tonsillitis as a local infection. He had been subject to tonsillitis, and had found that if he took the trouble to paint his throat with equal parts of tincture of iodine, carbolic acid and glycerine he would not have it.

DR. STEPHEN H. LUTZ had found in his own personal experience that sore throat was cleared up promptly by the use of salol for a day or two, followed by rhubarb and soda.

DR. EWING W. DAY called attention to the use, by means of a spray, of pyocyanase, which is imported from Germany. This, sprayed over the tonsil, will cut off an attack of follicular tonsillitis in from twenty to twenty-four hours.

DR. GEORGE L. RICHARDS disagreed with Dr. Wilson. The urine must be centrifuged if the examination is to be at all thorough.

DR. ALVA E. ABRAMS did not consider that Dr. Loeb had laid too much emphasis upon the subject under discussion, and upon the importance of examining the urine. He had been surprised, in making such examinations, to find how many patients have a moderate degree of nephritis. He cited the case of a man, thirty years of age, who had twice been rejected by life insurance companies. He had consulted the speaker for tonsillitis, and examination of the urine showed it to be loaded with albumin. It was more than two weeks before he was out of danger, and more than two months before he had merely transitory albuminuria. He called attention to the danger of the careless use of chlorate of potash. Two deaths within a few years had occurred in Hartford from its use in acute



tonsillitis. Even moderate doses of this drug are dangerous in this disease. Whether the condition has its origin in local or systemic infection, the tonsil should be removed as soon as the patient is in condition to permit the operation: Salicylate is as nearly a specific as any remedy he has tried.

DR. ROBERT LEVY thought the weak point in the discussion hinged upon the diagnosis of tonsillitis. Many mild cases of sore throat had proved to be diphtheria. A bacteriological examination should be made in every case of tonsillitis. It is very often impossible to make a differential diagnosis between tonsillitis and mild diphtheria.

DR. B. R. SHURLY asked if bacteriological examination had been made, and if there were any naso-pharyngeal complications in the cases reported by Dr. Loeb. The naso-pharynx in all these infections is the key to the problem of nephritis, endocarditis, etc. Many cases of albuminuria are not nephritis. There is a great deal in the bacteriology of tonsillitis which explains these complicating conditions.

DR. JOHN THOMPSON called attention to a paper published twelve years ago by Wagner, giving his experience with rheumatism following tonsillitis, and stating that he had found the same organism in the tonsils and in the fluid from the joints. Goldthwaite, of Boston, found that it was much easier to find the streptococcus in the joint tissues than in the fluid. The speaker cited a case of acute tonsillitis in a girl who, five days later, developed acute nephritis and died.

DR. STUCKY asked Dr. Loeb if in any of his cases the tonsils were submerged or adherent.

**The Effect of Tobacco and Alcohol on the Ear and Upper Respiratory Tract.** By H. O. REIK, M. D.

*Abstracted in the October, 1910, issue of THE LARYNGOSCOPE, p. 1009.*

**DISCUSSION.**

DR. PHILLIPP KERRISON said that he personally had never seen a case of deafness which could be definitely traced to alcohol or tobacco. He had, however, treated a few cases of tinnitus in which distinct benefit had resulted from moderating or stopping the use of tobacco. In no case was the tinnitus completely checked by stopping the use of tobacco. There was no question that either alcohol or tobacco might injuriously affect the ears in one of two ways, i. e., by exciting congestion and consequent tissue changes in the naso-pharynx and Eustachian tubes; or by directly influ-

encing the auditory nerves. In the literature of the subject he had failed to find much that was definite, with the exception of a few cases reported by Bezold. Bezold's cases occurred among medical students who for several weeks had been drinking excessive amounts of beer. The symptoms complained of were tinnitus and marked deafness, which more or less promptly disappeared after the drinking was stopped. According to Bezold's theory, prolonged excess in alcohol produces irritation of the auditory nerves, resulting in a functional disorder, which disappears after the drinking of alcohol in any form has been discontinued.

In clinics it was not uncommon to meet with patients suffering from definite ear symptoms, who also gave a history of excessive drinking or excessive smoking; and it was to be regretted that in the present state of knowledge there cannot be traced, with any degree of certainty, a causal relation between the aural symptoms and the excessive use of the drugs under consideration.

DR. NORVAL H. PIERCE said he would not positively assert that there is such a thing as "nicotine ear," but he was inclined to believe that there was, and attempted to paint the clinical picture. With otoscopy negative, and auscultation of the Eustachian tube negative, there is in these cases no absolute loss of tone perception, no islands or defects, but as the scale ascends there is a diminution in duration for tuning-forks. This loss is not confined to any particular area, but extends over the entire length of the scale. High notes like the Edlemann whistle are not heard, but around C<sup>4</sup> there is a decided lessening in duration; bone-conduction is slightly decreased in duration; tinnitus may be slight or absent; Weber later changed to the least affected ear. The peculiar feature is the deafness or extreme hardness of hearing for words of all these pitches. He cited the case of a lawyer who was an excessive smoker, using eighteen cigars a day, and who complained of a steady increase in hardness of hearing. He was told to stop smoking and to take five grains of iodid of potassium a day, which is supposed to eliminate nicotine. In a month he returned, and whereas he could previously hear such words as "zig-zag" five or six inches from the ear, he could then hear them ten or fifteen feet away. No other treatment had been instituted but the abstinence from the tobacco and the administration of five grains of potassium iodid thrice daily.

DR. GEORGE F. KEIPER said that reasoning from analogy as to the tobacco amblyopia, which is misnamed and should be called whiskey amblyopia, for tobacco without whiskey can hardly be said

to produce the trouble as above, one is right in assuming that tobacco of itself is not likely to produce defects in hearing, at least there is no proof to that effect. But alcohol does produce hearing troubles, as may be seen every day by contact with the bibulous. The staggering gait of the drunkard is probably due to its effect on the semi-circular canals. That it diminishes the hearing of such an individual is easy to ascertain. In a case of so-called tobacco amblyopia examined by the speaker, an engineer of a transportation company, in which a test for hearing is also required, he thought he detected a shortening up of the range of hearing, together with a diminished bone-conduction, and islands, as it were, wherein the tone-perception by air-conduction was much reduced. So, as it stands to-day, the verdict as to tobacco of itself producing ear troubles must be "not guilty."

DR. J. E. SHEPPARD mentioned the fact that after riding in a smoking car in winter or attending some doctors' banquets he had suffered from tinnitus the following day. In each instance he attributed it to tobacco, and to the carbon monoxid and not to the nicotine. With reference to the effect of tobacco on the auditory nerve, he said of course the tuning-fork tests merely show that the nerve is involved, whether the cause be syphilis, alcohol or tobacco, making no difference in the tests. He had had perhaps as many as ten cases of extreme nerve-deafness in which he had noted, with a question mark after it, tobacco as the probable etiological factor. In two or three of these cases stopping the tobacco and giving iodide of potassium had resulted in distinct benefit. More careful examination with the tuning-forks would doubtless reveal a larger proportion of nerve involvement, and some of this increase may possibly be due to tobacco.

DR. ROBERT H. CRAIG spoke from personal experience of the effect of tobacco upon the hearing, being himself particularly susceptible to its influence. Excessive smoking considerably diminished his hearing. He attributed it to congestion of the naso-pharyngeal tract and Eustachian tubes caused by irritation of the smoke. He also observed that many patients suffering from chronic catarrh of the middle-ear found their hearing markedly affected by the use of tobacco. In discussing a subject of this kind, however, one must not forget the idiosyncrasy of the individual, for just as certain food-stuffs disagree with certain patients, so does the use of tobacco have a deleterious effect upon the ear, nose and throat of certain individuals when the point of least resistance is situated in this part of their anatomy.

DR. EDWARD B. DENCH has had the same results, with slight modifications, as those mentioned by Dr. Pierce, in testing the hearing of patients who smoked excessively. He had found diminution in bone-conduction for a fork of 256 double vibrations per second, and a diminution to air-conduction in the middle portion of the musical scale, that is, from 512 double vibrations per second to 2,048 double vibrations per second. Whether or not this impairment was due to the excessive use of tobacco, he could not say, but he had often found this condition in some patients who smoked excessively, and the hearing improved upon cutting down the tobacco consumption. He had found the internal administration of strychnine of much value in these cases.

DR. REIK, in closing the discussion, said he was inclined to think that the title of his paper be altered by striking out the reference to alcohol, and would ask permission to do so. It must have been evident to all that but little attention was really given to that subject. In preparing the matter he had found that it would be practically impossible to cover both topics without writing at great length, and, that there are so many side issues in the alcohol questions that it would be difficult to untangle them satisfactorily. It would be better then to allow a change in the title so that it shall relate only to tobacco.

Dr. Craig had touched upon a very important element in the tobacco problem, that is, idiosyncrasy. The term "excessive use" means a different thing to different individuals. One person may smoke a large quantity of tobacco daily for many years and without evil effects, while another finds even one cigar poisonous. That has been shown very clearly in regard to toxic amblyopia.

The defect in hearing upper notes, referred to by Drs. Pierce and Dench, holds true in old persons whether they are users of tobacco or not. He called attention to the fact that the wide differences of opinion existing on this question are well illustrated in this discussion. Drs. Pierce and Dench have looked upon a loss of high notes as possibly characteristic of tobacco deafness, while Wingate believed the only definite lesion to be a loss for low notes.

**Carcinoma of the Uvula.** By EDGAR M. HOLMES, M. D.

A new growth in this locality can be easily removed if only the operation can be performed in the early stages of development, before it has protruded into the palate and tonsillar area. Early in the disease there is much less danger of the cervical lymphatics being infected and there is, of course, still less need of the surrounding

tissue being removed, and therefore there is much less resulting deformity. The chances of recurrence are much less when there can be an early diagnosis and an immediate excision of the growth and adjacent structures. It is evident that it is of the utmost importance that an early diagnosis be made of any indurated swelling or growth occurring in this locality, whether it presents an area of necrosis or not. In any case, the patient should be informed of the importance of having a microscopic examination of a portion of the growth, and plans should be made for an immediate operation if the examination proves the growth to be malignant.

There is a particular reason for haste in removing malignant growths from this locality as the lymphatics drain into the sub-maxillary and deep cervical glands. The deep cervical glands lying as they do in a network of vessels and nerves, including the sympathetic plexus, make it no easy matter to thoroughly remove them even when there is no disease present. When malignant disease originating in the uvula has extended into the soft palate and into the faucial pillars and tonsil as it did in this case, it is no easy matter to dissect about it with any feeling of assurance that the whole diseased area has been removed.

The diseases which may simulate in appearance carcinoma of the uvula are syphilis, tuberculosis, traumatism, Vincent's angina, and pemphigus. Of these, syphilis is by far the most common. A necrosing, syphilitic gumma may produce absolutely similar appearances macroscopically to those produced by malignant new-growths. Occasionally a tuberculous ulceration may produce a similar appearance to carcinoma, but it is very rare to have a tuberculous ulceration of the uvula, and when this does occur there is almost always tuberculosis of the lungs. The other conditions named very rarely produce a condition in the uvula simulating malignant disease.

The earlier the diagnosis and removal of the disease by operation, the more favorable is the prognosis so far as recurrence is concerned. When much of the soft palate has to be sacrificed there follow the disagreeable conditions found in congenital cleft palate. The speech is changed and there is often difficulty when swallowing liquids to prevent their passage into the nose.

When a new growth located in the uvula has not advanced, the operation is comparatively simple, but often the process has extended into the pillars and into the tonsillar tissue, and the operation is then not an easy one. The question must always arise as to the removal of the glands into which this area drains. In view of the accompanying shock, the fact that one side is as apt to be involved

as the other, that both sides may be affected, and that they may be infected on the side showing less marked advance in the original growth, it would not seem advisable, in the author's opinion, to remove all the glands at the time of the first operation unless there were some signs of disease in one or more of them.

The history of a case of carcinoma of the uvula was detailed. When the patient, a man, was first seen, September 21, 1908, the uvula was gone and at its site was an ulcerated granular area surrounded by a nodular growth which involved the pillars of the left side. There was no swelling of the deep cervical glands. This growth was removed, together with the pillars of the fauces and the tonsil. Microscopic examination confirmed the diagnosis of carcinoma. There was no local return of the disease, but a year later the patient returned with a swelling in the right side of the neck. Superficial and deep glands of the neck were enlarged, also one gland under the tongue. An attempt was made to remove all the glands of the neck, but some were found to be softened and necrotic, rupturing and discharging into the wound upon attempted removal. About two months after this operation the patient returned with a swelling behind the sterno-cleido-mastoid muscle. A week later this was fluctuating, and was incised; the incision opening into a cavity filled with pus and necrotic material. Four days after this, erysipelas developed on the right side of the neck and face. He recovered from this, but the whole right side became involved, and the end is near.

DR. GEORGE B. WOOD emphasized the importance of removing the lymphatic glands of the neck at the same time that the mass in the throat is removed. The specialist does not see these cases, as a rule, until there is some lymphatic involvement, perhaps only microscopic, so that the lymph nodes are not palpable. If the disease is confined to one side of the throat, the hemorrhage is easily controlled by first ligating the external carotid artery. The functional results of large operations upon the soft palate are not so bad as they have been represented to be. In all the cases he has operated upon he has never seen one in which there was nasal regurgitation, and in two cases, which are alive up to the present time, there has been no change in the voice despite the fact that the greater part of the palate had been removed. If the hemorrhage is controlled, it is possible to do an extensive removal of the tissues of the throat through the mouth without any serious consequences, but the fatalities from the operation are enormously increased when external pharyngotomy is performed.



DR. JOHN A. THOMPSON cited a case of carcinoma of the tonsil with involvement of the cervical glands, upon which he had operated last January. The neck was opened, all diseased glands removed, the external carotid tied, and the wound closed. The growth in the mouth was then removed. The patient lost only about a dram of blood. The starvation method of tying off the arterial supply has been recommended in some of these cases. A few days ago this patient, a man of 72 years, with hard arteries, complained of difficulty in swallowing. Careful examination showed the side of the throat and neck operated upon to be perfectly clear, but a large sarcomatous mass had developed on the other side of the tongue. When malignant disease is found in the nose or mouth, as a rule, there is a focus somewhere else in the body. The surgeon in the case cited advised the use of Coley's Fluid, with which he had had excellent results. While not always curative, it seems to lessen the danger of recurrence.

DR. GEORGE L. RICHARDS cited a case in which the pathologist made a diagnosis of sarcoma. There was involvement of one side of the uvula, of the corresponding portion of the arch, of the upper one-third of the anterior and posterior pillars, and of the upper part of the tonsil. It was covered by a thin membrane which was removed with difficulty. The diagnosis was for a long time in doubt, the pathologist first reporting from an examination of the membrane that it was a fungous growth. The growth was nodular, and a piece of this taken off for examination proved to be sarcoma. There was for a long time no macroscopic involvement of the glands. The first involvement of the glands occurred on the opposite side. Once the glands became involved they enlarged very rapidly, those on the side on which the uvula was affected becoming larger than the others. The axillary glands also became involved, and the condition terminated fatally.

DR. HOLMES, in closing the discussion, maintained that unless the glands are known to be diseased, it is radical surgery to remove them. In the case cited, it would have been necessary to remove the glands of both sides of the neck, which would have entailed considerable hemorrhage and shock. Inasmuch as the disease was carcinoma, Coley's Fluid was not employed.

**Consideration of the End-Results of the Operation for Sub-Mucous Resection of the Nasal Septum.** By F. C. COBB, M. D.

The paper showed the results of the sub-mucous operation after the lapse of several years. The cases were operated by men some-



times experienced in the procedure, sometimes almost new to it. As a result, the number of faults in technic were at first large, and perforation very common. Fifty cases were selected in which the longest possible interval had elapsed since the operation. Most of them had been operated on four to six years ago. The information desired was: 1. Whether the operation had relieved the obstruction for which it was done. 2. Whether naso-pharyngeal catarrh, deafness, or other symptoms had been relieved. 3. As to the bad effects of the operation; whether perforation caused annoyance and in what way; whether dryness or scabbing occurred in mucous membranes deprived of their cartilaginous framework; whether cartilage renewed itself; what faults were most common in the technic as shown by after-results. 4. In children under 15 years of age, did the removal of a large piece of cartilage interfere with the normal growth of the nose in such a way as to cause dropping of the tip or other deformity.

On the 50 cases examined, obstruction was subjectively relieved in all but five or six cases, and in these, the improvement was slight or absent. In two or three, turbinectomy was resorted to. Naso-pharyngeal catarrh was seldom entered on the histories as a result of the nasal obstruction, and if present, was relieved in about half of the cases. Perforations, which resulted frequently in the earlier operations and diminished as the technic improved, seemed to cause but little trouble unless the patient became aware of their existence and then the complaints seemed more nervous than real. Scabbing and crusting were seldom troublesome, even when evident objectively.

The records were not complete enough to enable the author to be sure that scabbing or crusting was or was not due to destruction of part of the mucous membrane of one side. In a few of the cases, antra were subsequently opened and found to contain pus, and a mild ethmoiditis might have given the same result. In no case was there any reproduction of the cartilage. The fault most commonly met with was insufficient removal of the base and next in frequency the leaving of cartilaginous projections above.

Of great interest to the writer was the effect of the operation in young children. It has always seemed possible that the removal of cartilage, containing perhaps centers of growth, might affect the development of the nose so as to cause some difference in its shape. Sixteen children under 15 years and over 6 years were examined. Of these, four showed some alteration in the shape of the nose from the normal standard. Two of these, according to the parent's re-

port, were always broad and drooping slightly at the tip. One had a depression at the end of the nasal bones, which was there before operation, perhaps on account of an old abscess of the septum. The fourth, a very marked case, was the result of a fall which had probably caused the deviation. Further investigation showed that but little of the cartilage had been removed but that a Gleason operation had been done subsequently.

Although in this series no bad results are observed, yet the writer feels until more cases in young children have been examined, no absolute scientific conclusions can be drawn.

#### DISCUSSION.

DR. GEORGE L. RICHARDS had looked up the records of 150 cases of sub-mucous operation on the septum done either for deviation, for spurs or for both. In the series of 150 cases, six had perforations. In two, syphilis was a factor, but unknown at the time the operation was done. These should, therefore, in fairness to the operation, be deducted from the number of perforations, leaving four, or one in 37.5 cases. It would seem that whereas a perforation can usually be avoided, there is an occasional case where instead of a true bend, there is a sharp knuckle on one side and a corresponding sharp depression on the other. The mucous membrane covering both sides is very thin. To lift up the mucous membrane on the concave side and to remove the cartilage without nicking or breaking through on the convex side, is in the occasional case well-nigh impossible, no matter how experienced the operator may be. He had not found the perforations to be of any particular moment; they have not been very large nor have any whistles been produced. They were more frequent in the earlier operations, when the nasal saw, Asch operation or the Watson-Gleason operation, were employed.

Formerly, he had hesitated about doing a submucous operation on the stubby nose of a small child, the one occasionally seen where the bend blocks one nostril and the projection of the tip of the cartilage blocks the other. After one or two submucous operations on these, in which some months afterwards there appeared to be a slight depression, he had changed entirely his plan of operation on the young child, and now operates under ether on any child with an anterior deviation. The method is as follows: An incision is made on the convex side a little back of the tip, preferably, in the left nostril, whichever way the deviation may be. The mucoperiosteum is then dissected back as far back as the deviation ex-

tends, which in these children is not apt to be for a very great distance. An incision is then made through the cartilage, a little back of the tip, and the muco-periosteum dissected up on this side as far as may be necessary. With a nasal chisel the attachment of the septum to the floor of the nose is severed, leaving the cartilage for the moment attached above and posteriorly, but not inferiorly. The septal cartilage is now entirely movable, but freed from its inferior attachment, which, if left, tends during the healing process to reform the deformity. The cartilage is now straightened with the finger, brought into the vertical position, and held there with cotton splints for two or three days. There is no sinking in, as no cartilage has been removed; it has only been reshaped. The muco-periosteum re-attaches itself. The results so far, in the few cases in which he had used this operation, have been entirely satisfactory. It certainly has the advantage that no tissue is removed, and this in the growing child is a decided advantage. Later on, if for any reason the deformity should reform when the individual is at a suitable age, another operation can be done. In the cases operated on in this way there has been a sufficient amount of air-space left. It is very essential that the nasal process of the superior maxilla be fractured, especially if there be any protuberance of it to one side or the other of the middle line. It may even be necessary to remove a small portion of this spine if it should be redundant. In removing this, there is no danger of the septal cartilage sinking in. It is necessary to dissect up the muco-periosteum, so that when the septal cartilage is put into proper position, it will attach itself properly to the muco-periosteum in its new location.

So far as the general results of the submucous operations are concerned, they have been satisfactory. Although it cannot be said that in all instances the operation has accomplished everything that the patient desires. Patients will still complain of catarrh, but they can breathe, and for the purpose of proper breathing alone, the operation is worth doing. Improvement continues for some months before the full result is attained. Where the inferior turbinate is also hypertrophied, it seems unwise to operate on it at the same time as the septum, as there is a possible danger of an adhesion, and the patient suffers more when both are done at once. He now operates on the turbinate some time after the septum wound has completely healed.

DR. HARRIS P. MOSHER was pleased to have Dr. Cobb report this series of cases at the Massachusetts General Hospital, because these

same cases have recently been reported by recent graduates from the hospital, who had not handled the subject as satisfactorily as Dr. Cobb has done. The difficulties which the speaker encountered were in the children upon whom he operated. He had operated upon a number under 8 years of age, which are included in this series. It had been stated that there was a drop to the tip of the nose, whereas Dr. Cobb found very little, if any, drop in the series of cases. But in one case there was a drop, but the patient was operated upon by the old Gleason method. Perforations occurred either very early, during the first three weeks, or after two years, and in considering the end-results of submucous resection, this fact must be taken into consideration. He had had a number of private patients who had complained of scabbing as late as a year or two after the operation. Most of his submucous resections are done under ether anesthesia, and in many cases he trims the inferior turbinate, particularly where the nose is narrow.

DR. THOMAS J. HARRIS agreed with Dr. Cobb that the end-results are subjectively as satisfactory in the main, but objectively not entirely so. He wished to add to the end-results an interesting case which had come under his observation in the Manhattan Eye, Ear and Throat Hospital. The patient, one of the assistants at the hospital, had a point of contact between the nasal septum and the nasal wall on the side of the convexity. A submucous resection was performed by one of the distinguished Vienna surgeons. The result is a complete cicatricial stenosis on the side of the septum. The speaker had never seen such a result, nor had he ever heard of such. Packing with long strips of gauze was used, which was left in for some time, then withdrawn, causing considerable traumatism.

DR. ROBERT LEVY called attention to the carelessness which often pertains in the taking of histories before operation, especially as to syphilis. This had been impressed upon him by the experience of Jansen, who was at one time threatened with a mal-practice suit because he had operated upon a patient who had syphilis and in whom a nasal deformity resulted. One should always make a thorough investigation as to syphilitic infection. The same need not be said with reference to tuberculosis. He had operated for deflected septum upon many tuberculous patients without fear of necrosis and with much general benefit. The dropping of the tip is the result of the development of contracting cicatrices. Even when the cartilage is not removed, but merely replaced, there is danger of

cicatricial contraction and deformity. In view of the unsettled opinion as to the deformity, he advocated operating upon adults only to the extent of relieving completely the obstruction. Children under twelve years should not be operated upon for the correction of slight or moderate deflection. The object in all cases should be to relieve the deformity and not to see how much of the septum can be removed merely because it is a part of the operation.

DR. STEPHEN H. LUTZ called attention to the wisdom of removing as little cartilage as possible in adults, for the reason that very little new cartilage is formed as one advances in years. Perforations which occur two and three years after the operation, as cited by Dr. Mosher, are probably due to the habit of picking the nose. He mentioned two cases in which this was established positively. One patient, four days after operation, had a good septum; on the fifth day, there was a large perforation. The patient confessed that she had scratched the nose with the finger, which went through. Such an accident is apt to happen when the perforation is far forward, in persons who have the habit of picking or rubbing the nose.

DR. EDGAR M. HOLMES asked Dr. Cobb why he pared the turbinates, whether he did so in cases of hypperplasia or general bony hypertrophy, whether he pared both sides, and how much of the turbinate tissue he removed.

DR. SIDNEY YANKAUER was convinced that the scabbing after the submucous operation depends entirely upon the amount of scar tissue that is left in the septum, in other words, upon the area of the septum which is denuded of its ciliated epithelium. In cases in which a horizontal scar is left, particularly in flap operations where there is considerable retraction of the flap, so that there is left a broad band of squamous epithelium running horizontally over the septum, there is the greatest scabbing. The reason for this is that drainage of the nose and accessory sinuses takes place over the septum, the flow depending considerably upon the presence of ciliated epithelium. The broad band of squamous epithelium interferes with the flow, and the scabbing results. A vertical incision is, therefore, preferable to the horizontal. He always avoided, if possible, operating upon young children. In over 300 submucous operations he has not operated upon more than half a dozen children. In the first place, he objects to doing a submucous resection under a general anesthetic, or in the horizontal position, as it is almost impossible to obtain a bloodless field of operation and to do an exact operation under these circumstances, particularly in an extreme devia-

tion. In the second place, the majority of the children who have deviations do not suffer from this alone. They have or have had adenoids, removal of which causes a decided alteration in the face as the years pass. Many of these children have high arches and projecting teeth. If a child has a small face, when there are adenoids the nasal chambers are small and undeveloped. When the adenoids are removed and the face develops there is considerable chance for the deviation to become obliterated of itself. For these reasons he has operated upon children only when there was extreme deviation, and only when the child was sufficiently tractable for the operation to be done under local anesthesia. In such cases he removes only enough tissue to insure breathing.

DR. ROBERT H. CRAIG performs the submucous resection in two stages when a general anesthetic is indicated. He makes the original incision and liberates the muco-perichondrium and periostium under cocaine (adrenalin) anesthesia. The patient is then placed in a recumbent posture, ether is administered and a post-nasal tampon is inserted. A mouth-gag is applied and a suture put in the tongue for traction purposes. The nasal packing which has been saturated with 1-4000 adrenalin solution is removed from both nostrils. The deflected cartilage and bone can be removed carefully and deliberately. Since adopting this method of operation in two stages (when it is desirable to administer a general anesthetic) Craig has had no difficulty in controlling hemorrhage, which caused considerable trouble and loss of time in many of these cases.

DR. WENDELL C. PHILLIPS thought the end-results depended in large measure upon the technic and the skill of the operator. His best results had been obtained with the patient in the recumbent position on the operating table, with the head-rest high. The discomfort to the patient is thus obviated, the liability to fainting is lessened, and the manipulation on the part of the operator is much more easily accomplished. He had never had reason to do the operation under a general anesthetic. In atrophic rhinitis, according to Wright, the operation should never be performed.

DR. COBB, in closing the discussion, said that he had not seen the perforation occur subsequent to the operation. He believed that a small perforation may have occurred in the mucous membrane with laceration of the periostium and that the increased size was due to the shrinking of the mucous membrane edges until they reached the firm support of the periostium below.

